THE MOST WONDERFUL HOUSE IN THE WORLD

BY

MARY S. HAVILAND

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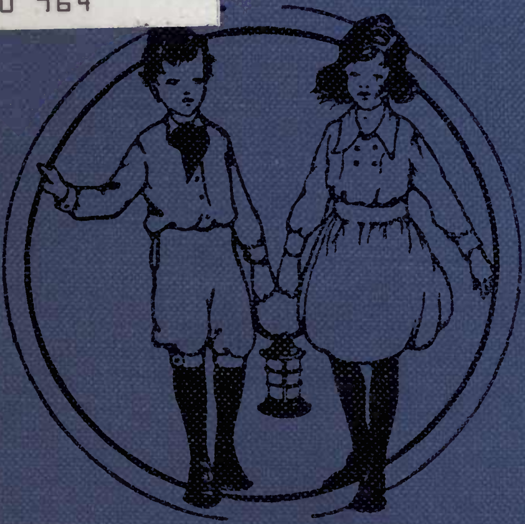

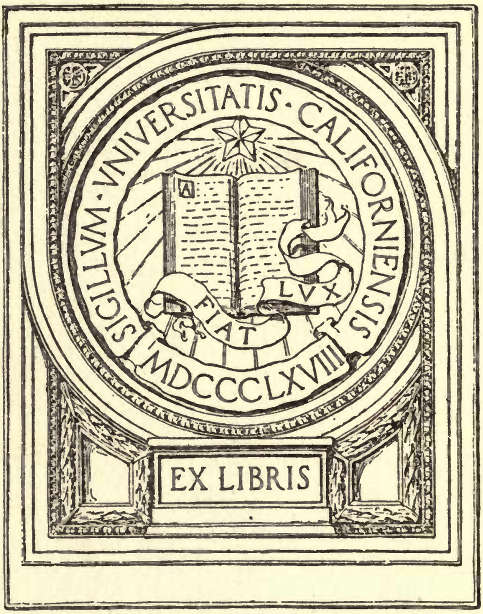
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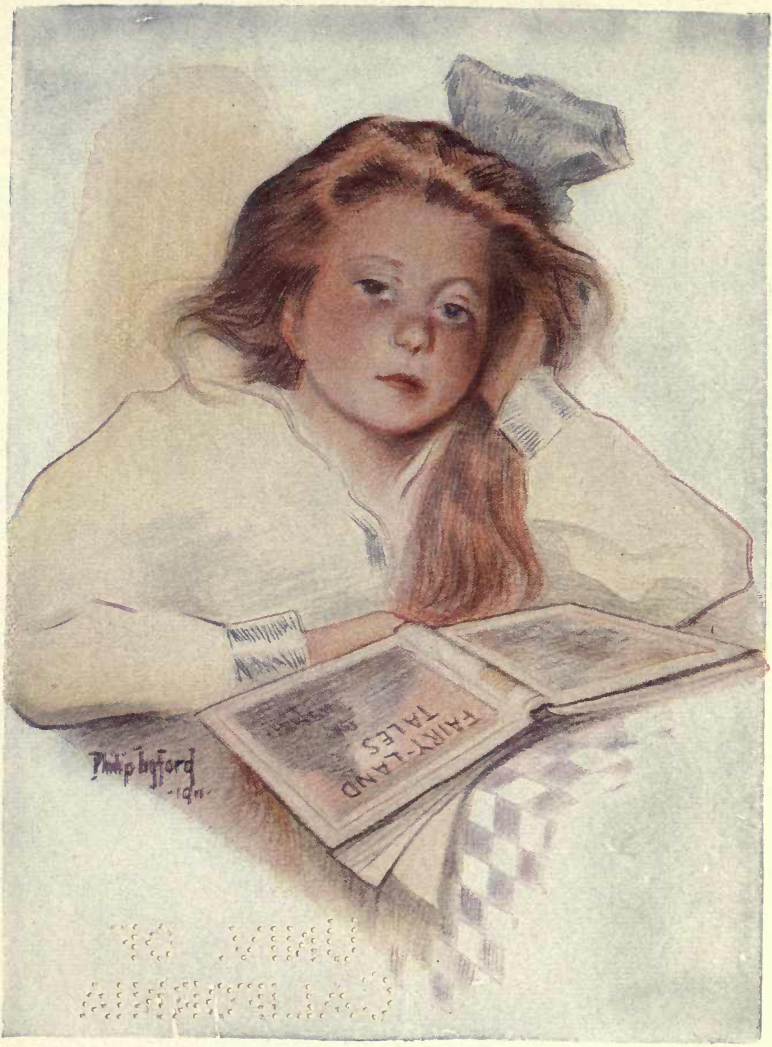
FAIRY-LAND
TALES
Philip Lyford
1911

RUTH

THE MOST WONDERFUL HOUSE IN THE WORLD

THE MECHANICS AND HYGIENE OF THE BODY

BY

MARY S. HAVILAND

RESEARCH SECRETARY OF THE
NATIONAL CHILD WELFARE ASSOCIATION, INC.

ILLUSTRATED BY
KATHARINE M. DALAND

PHILADELPHIA, LONDON, CHICAGO
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PREFACE

THE immortal Mr. Dooley has declared that "you can lead a boy to college, but you can't make him think."

The object of these little books is to make children *think* about health, for while it may be "never too late to mend" bad health habits, it is never too early to form good ones.

Health cannot be forced from without; it must be fostered from within. It is not enough for us to provide our children with proper food, clothe them suitably and keep them clean. We must also give them an intelligent understanding of the hows and whys underlying the laws of hygiene, and must impart to them the contagion of our own enthusiasm for health.

Therefore I have sought, in these informal talks with "Ruth and Paul," not to convey the maximum number of facts, but to arouse the maximum degree of interest. Facts may be quickly forgotten, but interest, once fully aroused, never quite dies.

For this reason THE MOST WONDERFUL HOUSE IN THE WORLD does not seek to cover in any complete fashion the field of physiology. It gives only such general facts as are needed to explain in a simple way the workings of the bodily machine and the best methods of keeping it strong and healthy. The details of physiology may well be studied when the boy or girl is older, but for the children in the lower and intermediate grades, physiology must be taught merely as the basis of hygiene.

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To many friends thanks are due for advice, criticism and proofreading. I also desire especially to acknowledge my debt to Dr. W. F. Russell, Dean of the College of Education of the University of Iowa; Professor Jean Broadhurst and Miss Caroline E. Stackpole of Columbia University, and Dr. Martin Edwards of Boston, all of whom have given generously of their time and interest in behalf of these books. To Miss Emma Dolfinger, Normal School, Louisville, Kentucky, I am indebted for the valuable questions and suggestions at the end of each chapter.

MARY S. HAVILAND.

National Child Welfare Association,
New York City.

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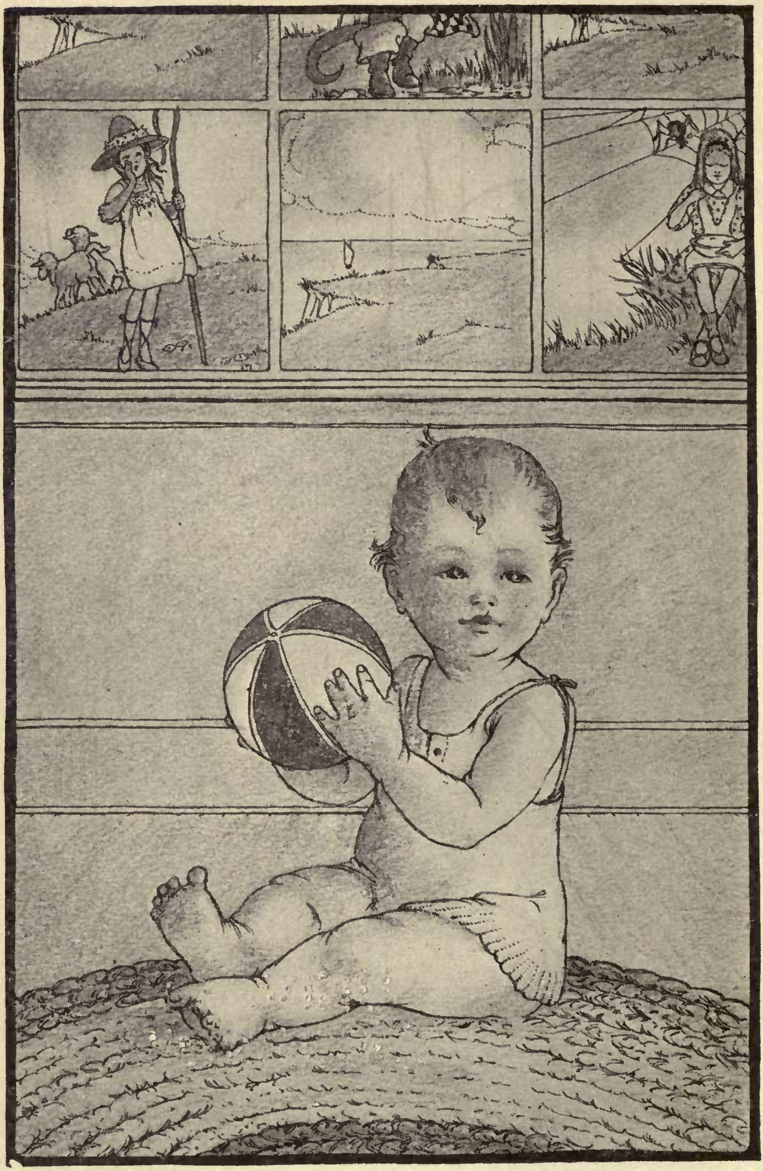

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THE MOST WONDERFUL HOUSE

CHAPTER I

THE FRAMEWORK OF THE HOUSE

" WHEN I grow up," said Paul, "I'm going to be an Indian."

"I'm not," said Ruth, "I'm going to be an architect, like Uncle George, and build houses."

"Huh!" grunted Paul. "Girls can't build houses."

"They can, too, if they want! Can't they, Mother?" cried Ruth, indignantly.

"Yes, indeed," Mother replied. "Very good houses have been built by women. But everyone, every boy and girl, builds at least one house, the house he or she lives in."

"Why, I didn't build this house," said Paul.

"That isn't what Mother means," exclaimed Ruth. "She means that each of us has a body and lives in it just as if it were a house. But I don't see how we build our bodies," she added, doubtfully.

"Have you watched the men building the big City Bank, downtown?" asked Mother.

"Oh, yes," said Ruth. "Daddy watched them with us for a long time yesterday. They had put up a lot of great, tall, steel posts with cross-pieces between."

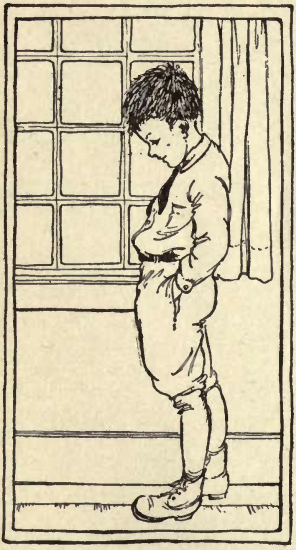
"Yes," broke in Paul, "and they were beginning to lay the bricks."

"Were the steel posts straight?" asked Mother.

"Why, of course," said Ruth. "They are to make the Bank strong, Daddy said, and if they were crooked, the whole building might fall down."

"And were they laying the bricks straight?"

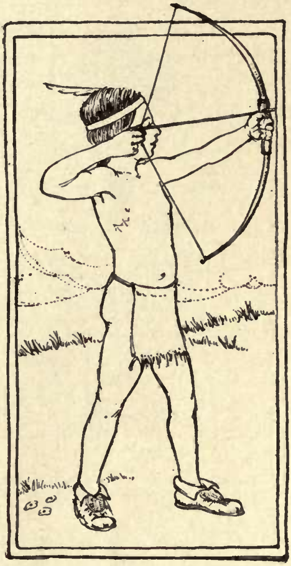
"Oh, yes," nodded Paul. "They had a string stretched along and laid all the bricks right against it, so as to make a perfectly straight wall. It must be lots of fun to slop the mortar on and smooth it down; I think I'll be a brick-layer."



"Well," laughed Mother, "you'd better begin by building your own house straight. Now here are some pictures that I took yesterday when you and Ruth weren't looking. What do you think about your house, Paul? Is it very straight?"

Paul hung his head in silence. "You see," resumed his Mother, "your bones are like the steel part of the building and your muscles are a little like the bricks—they must be straight and firm and strong to hold the body upright. Paul's head in the picture is hanging forward and down, his chest is hollow, his stomach is pushed forward, he is standing on the side of his foot and his weight is on his heels."

"Well, how ought a fellow to stand?" growled Paul.



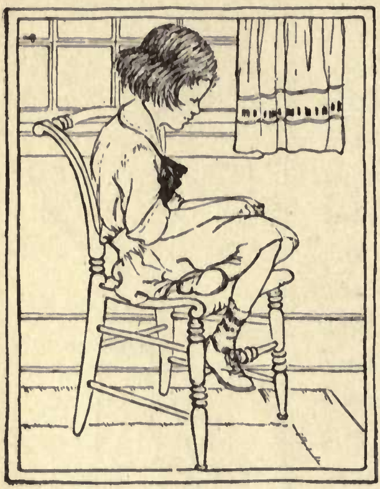
Mother brought from the bookcase a volume of "Hiawatha." "I think you said you wanted to be an Indian, Paul, but I am sure the chief would turn you out of the tribe. Now here is the way the Indian boys stand. Compare him with your picture and see how much finer and stronger he looks. His head is up, his chest is lifted, his shoulders are flat and he stands not on his heels, but on the balls of his feet. He looks strong and ready for anything."

"How can you tell when you are standing right?" asked Ruth.

"The simplest way," said Mother, "is to see whether your chest is lifted and whether you can rise on your toes, just as you stand, without swaying forward first. If you can do this, you are standing pretty well."

"But I get tired standing in one position," said Ruth.

"Of course," said her Mother, "but the way to rest is not to sag over sidewise, and make your hips and shoulders crooked, but to put one foot forward and rest on the other. You see, you children have softer bones than grown people, so you must be very careful that they do not grow crooked, or they will stay that way."



Paul was anxious that Ruth should not be let off. "Let's see the other photograph, Mother," he urged.

"Oh!" exclaimed Ruth, as she looked at her picture, "was I really sitting all slumped together and on my foot like that?"

"You certainly were," said Mother.

"The worst of it is," put in Father, who had come in unnoticed, "that a house that is badly built is not only ugly, but useless. Just so, a body whose bones are crooked and which is lopsided and all 'slumped together,' as Ruth says, is ugly, weak and sickly. That picture of Ruth makes me think of the rhyme about the 'crooked man who walked a crooked mile.' You remember that he and his crooked pets all 'lived together in a crooked little house.' Look out, Ruthie, or that house of yours may stay crooked."

It was Ruth's turn to look uncomfortable, now, but she soon forgot herself in delight at a picture that her father produced from his pocket. "Oh, what a dear baby!" she exclaimed. (See Frontispiece.)

"Isn't he?" said Father. "He is the little son of an old friend of mine, who sent me the picture yesterday."

"See, Ruth," said Mother, "how perfectly straight his little back is. Mother Nature always tries to start us off with a good, straight house. New babies are almost always straight and healthy, but as we grow older, most of us get into bad habits of sitting and standing and so we grow crooked and weakly."

"He *is* a lot straighter than I am," said Ruth, "and yet he's sitting right on the floor with no back to lean against."

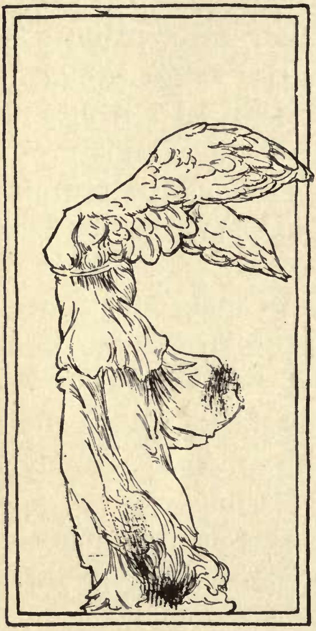
"That is a very good way to make one's back strong," said Father, "but since we are in the habit of using chairs, remember just two things, Ruth: Always sit with the end of your back against the chair back, not sliding forward, and always have your feet resting on the floor or on a foot-stool."

"Yes," said Paul, "our teacher always has the chairs and desks screwed up or down to make them the right height, so our feet are on the floor."

"That is an excellent idea," said Father. "You see, if the desk is too high, it hunches up your shoulders to work at it, and if it is too low, you lean over too far and it makes you round-shouldered and cramps your lungs."

"One day," said Ruth, "I talked during study-hour and Miss Scott made me sit with the kindergarten children. The desk was so low that I had to double way over and it gave me a stomach-ache."

"Well," said Mother, "we've found two reasons for sitting and standing straight and working in a good position. One is that it makes us healthier and stronger, and the other is that it looks much better. But there is another reason, yet, and perhaps it is the best reason of all."



"I can't think what it is," said Ruth and Paul, both at once.

Father smiled. "I think I know," he said. "Paul, when you fell out of the swing, the other day, and started to cry, how did you stand?"

"Why," said Paul, "I leaned up against the porch railing and put my head down on my arms."

"And what did I say to you?"

"You said, 'Brace up, Old Man!' And so I did brace up, and stood up straight, and wiped my eyes, and it didn't hurt much, after all."

"Of course it didn't," said Father. "Nothing ever does hurt so much if you stand up straight and strong instead of caving in and 'slumping together.' And that is what Mother means. If you get the habit of keeping your chest up and standing straight and looking firm and strong, it helps you to be brave and cheerful."

"Do you mean," asked Ruth, earnestly, "that if I try to *look* the way I want to be, it will help me to *be* that way?"

"That is just what I mean, Dear," said Mother. "And now, last of all, I want to show you a picture of a beautiful statue. This is a figure of Victory. Do you see how she steps forward, brave and glad and joyous? She doesn't slouch along. She looks and walks straight ahead, for she is Victory and she knows that nothing in the world can harm or frighten her. That is the way I hope my children will face the world."

THINGS TO REMEMBER

There are three reasons for standing, sitting, and working, in good positions. We grow healthier and stronger, we look better, and we *feel* like brave soldiers.

To be straight and strong, we must have straight, strong bones to hold up the body. We must have strong muscles to support and to move the bones. The bones are somewhat soft in places, while we are still growing. Therefore we must be very careful to sit, stand and walk in the best positions. Otherwise we may force the body framework into bad shapes, which we cannot change easily when we are grown.

Bones are made of two substances, a flexible material to keep them elastic, and a hard substance, something like limestone, which makes them strong and keeps them from bending. Children's bones, like babies' bones, are soft because they have little of the lime part. Drinking milk gives us lime for our bones and thus helps to make them strong. To keep good posture and to eat good food, are two of the best ways to build a fine, strong framework for " our house."

THINGS TO DO

1. Find out if you stand well. Get a window-stick or cane or umbrella. Stand up, and hold the window-stick straight up against your side. Let its base be in front of your ankle. Your head, body, and limbs ought to be parallel to the stick. Let some one look to see if they are.

2. When you are standing well, notice that your weight is on the balls of your feet. Now rise on your toes two or three times. Can you do it without swaying backwards or forwards?

3. Rest, by placing your right foot *forward* and resting your weight on the left foot. Change your balance, by putting the left foot forward and resting on right foot.

4. Sit. Push the end of your spine against the back of the chair. Rest both feet on the floor. Bend forward from your hips until you are sitting free from the chair. Lean back, and rest your shoulders against the chair-back comfortably.

5. Find out what our bones would be like, if they had no stiffening. Get a perfectly clean chicken bone. Fill a tumbler nine-tenths full of water, and one-tenth full of hydrochloric acid, which your teacher will give you. Put the chicken bone into the tumbler. After a few days, take out the bone and wash it well. Try to bend it. The acid has taken away the lime-part of the bone. Milk is the chief way we have of getting lime into our bones.

THINGS TO THINK ABOUT

1. Why should we want to stand, sit, and walk well?

2. What things about an Indian boy's standing position do you admire?

3. How can you train yourself to stand as well as the Indian boy? To sit well?

4. When you are tired of standing, how can you rest yourself, and still keep a good position?

5. What difference does it make whether or not we stand well when we are children?

6. What difference does it make what kinds of chairs and desks we use?

7. What can we do for our bones to give them a chance to become hard and strong? Why would you do this?

8. Look at pictures of heroes—of athletes. Do they *look* brave and strong? What do you think their posture has to do with this?

CHAPTER II

THE SPIRIT OF THE WILLOW TREE

"I THINK Sam Smith is awfully mean," said Paul, one rainy afternoon.

"Why, what does he do?" asked Father.

"He's always punching the little fellows. But Tom Fuller fixed him yesterday. He grabbed Sam's arm and twisted it. Sam's lots bigger than Tom is, but he had to go right down on his knees and beg Tom to quit."

"I think," said Father, "that Tom must have been studying jiu jitsu."

"What's that?" asked Ruth, looking up from her doll. "I never heard that word before."

"I suppose not," said Father, "and yet jiu jitsu, which means 'to conquer by yielding,' is a game hundreds—perhaps thousands—of years old."

"Tell us about it," begged Paul.

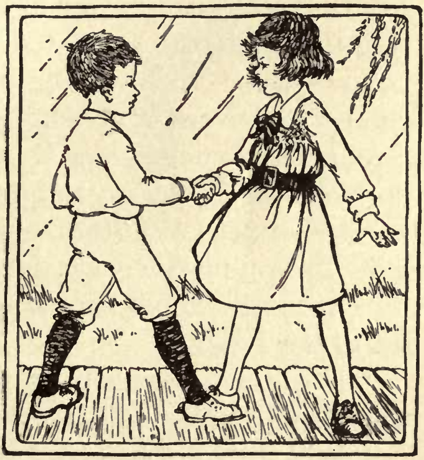
"One snowy day, about 400 years ago," began Father, "a young Japanese doctor, named Akiyama, who had been interested in wrestling in China, went out for a walk. He noticed that the pine-tree branches, which had held themselves stiff and straight, were broken with the force of the wind and weight of the snow. But he saw that the willow branches, instead of being stiff, had bent themselves down to the ground and were unhurt. Then Akiyama got to thinking that it isn't size and strength that count so much as being light and quick and able to twist and bend. So he started a school where he taught people to become quick and skilful and how to overcome others who were much heavier and stronger than they. He made them eat good food and not be greedy, take plenty of sleep and fresh air, keep very clean and lead a wholesome life—and the Japanese became wonderful wrestlers. He called his school 'Yoshin Riu,' which means 'Spirit of the Willow Tree.' "

"Do people in Japan learn that kind of wrestling, now?" asked Ruth.

"Yes, it is taught in the schools and the Japanese soldiers, sailors and police are trained in it. Of late years, it has been taught here in America."

"I'd like to learn it and throw Sam Smith," said Paul.

"I'm sorry I can't teach you," said Father, "but there is a sort of wrestling which is good fun that I can show you. Come out on the porch in the fresh air."



Father made Ruth and Paul face each other with their right feet together, right hands clasped and left feet drawn back, like this. "Now," said he, "you must not use your left hands and you are not to move either foot off the floor. Let's see which one can push or pull the other so as to make him lose his balance or move his foot."

For the next ten minutes, Ruth and Paul had a lively time, and they soon saw that to "conquer by yielding," to be quick and able to twist and turn is better even than to be very heavy and strong. At last, when Paul lost his balance, he pulled Ruth down with him and both children fell in a laughing heap.

"My!" gasped Ruth, "it's lots of fun, but I can hardly breathe."

"Whew!" said Paul. "I'm hot as can be!"

"So you like my game of the willow-tree wrestling with the snowstorm?" laughed Father. "It's a fine game to play on the porch on a rainy day like this, when it's too wet and muddy for hide-and-seek and base-ball and such games."

"We could play it just as well indoors," said Paul.

"No, indeed," Father replied, "when you are exercising, you need a great deal of air. Ruth is breathing hard still. That shows how much good our game did to her lungs."

"It did something to Paul, too. He's as red as a beet," said Ruth.

"Yes, it made the blood run faster all through his body and up into his cheeks. You children really ought to take a bath, to wash off the perspiration, but it's too near supper-time, so you had better put on your sweaters. You know athletes always cover up when they stop playing."

As Paul brought out the sweaters, he said, "Daddy, you talked about our muscles. What are muscles, anyhow?"

"You've seen raw meat, haven't you, Paul?"

"Oh, yes, lots of times."

"Well, meat is muscle, only that when it is alive, it can pull together and shorten up and then stretch out long again, just like a big rubber band. If my skin were peeled off, I'd look something like this. All over the body, you see, there are great numbers of these elastic bands, fastened to the bones. If you move your hand or foot, you can see the muscles moving in your arm or leg."

"Oh, yes," cried Paul; "yesterday Sam was showing the fellows how big his arm was when he doubled up his fist."

"Yes," said Father, "if we use our muscles, they grow and become strong. Exercise is good for the heart and lungs, too, and it helps the stomach to digest our food. If we lie abed or loll around the house constantly, we soon fall ill."

"I suppose that is why Sadie Smith's squirrel got sick," remarked Ruth. "She let him out of his cage and she saw him in a few days up in a tree, and he was as well as ever."

"Children usually get plenty of exercise," said Father, "for it's as natural for them to frisk around as for squirrels. But they should take different sorts of exercise, not just running, but wrestling, swimming, skating, rowing—all kinds of ways to use all parts of the body. It's well to remember, too, not to exercise too hard just after eating, or the old witch, Indigestion, may get you!"

"I think one thing that made me get so out of breath playing 'willow tree' was that my belt was too tight," said Ruth.

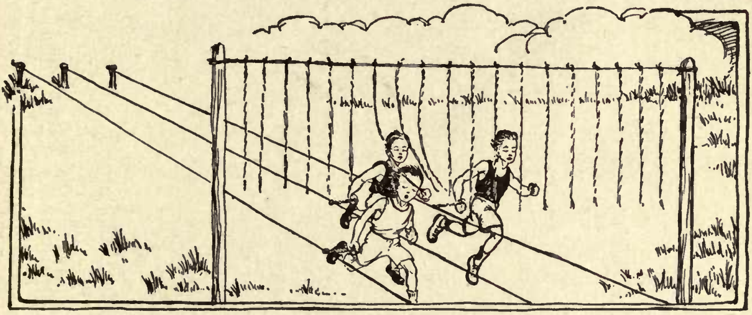
"Dear me!" exclaimed Father. "Don't ever exercise in clothing that is the least bit snug. It prevents your heart and lungs from giving your muscles the blood and air they need. I wonder," he added, "whether you children would like to go to-morrow to the athletic meeting at the School for the Blind."

"Athletic meeting!" cried Ruth. "Why, Daddy, how can those blind children run or jump or anything?"

For answer, her father pulled something from his pocket. "Here is their program," he said. "You can see in this picture how they arrange the races. The children take hold of these handles that slide along these stretched wires. It's just as if they had hold of someone's hand. Then, so that they may know when to stop, here, in front of the goal-post, is a fringe of ropes. When he feels the ropes touch his forehead, the runner knows that he has reached the goal."

"Oh, how nice that they can run and have good times, like the rest of us!" cried Ruth. "Do let's go, Daddy."

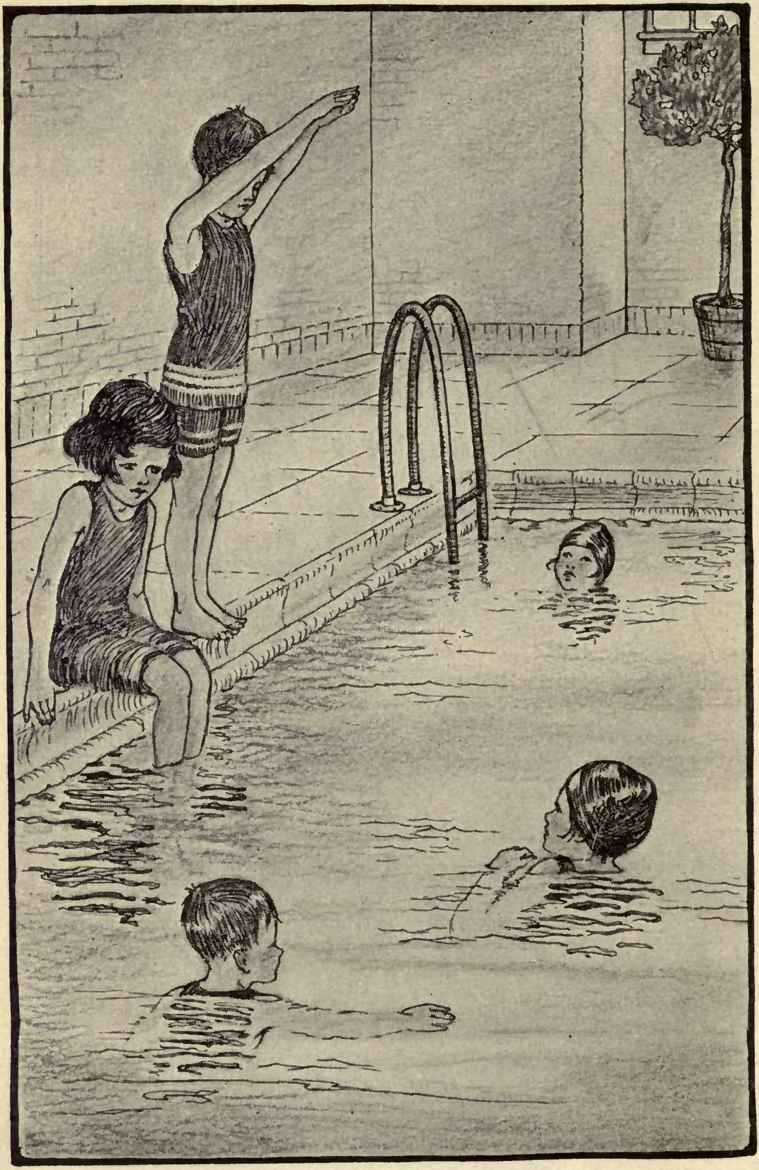
"We will," said Father. "I shall be interested to see how much stronger and healthier and happier the children are than they were before the superintendent started teaching them how to run and play.



Another set of children that I am sorry for are those in the poor parts of big cities. Some years ago, in a certain part of New York City, there were said to be only two square feet of sidewalk for each child. Just think of it! But most cities have begun to see that to have playgrounds and parks to keep people well, is wiser than to build hospitals to cure them after they are sick. See, here is a picture of a swimming-pool in one of the big cities."

"Swimming is good for you, isn't it, Daddy?"

"It's one of the very best kinds of exercise. A certain lady who is famous for her perfect figure, good health and skill as a swimmer, says she was a very sickly little girl—almost crippled—and that swimming cured her."



Mother had been listening at the window. "It's time for Paul to set the table and for Ruth to cut the bread," she said, "but first I have another picture that I want the children to see." She led them into the dining-room and pointed to a picture over the mantel-piece. "Do you see how strong and brave and happy this sturdy French girl looks?" she said. "She is taking her sickle to the fields to mow. The sun is only just up. It must be very, very early. But she is so healthy and happy that she sings as she goes to her hard work. Remember, children, that not only play, but work, willingly and happily done, is the best sort of exercise. It makes strong bodies, clear minds and happy hearts, like this peasant girl who sings 'The Song of the Lark.' "

THINGS TO DO

1. Find the muscles that move your fingers. Feel these muscles while you move your fingers, as if you were practicing scales on the piano.
2. Find the big muscle that bends your elbow up for you. Feel it as you bend the arm.
3. Find the muscles that move your head from side to side. Feel these muscles. How do all muscles feel when they are working?
4. Can you "chin" yourself? What muscles help you to do it?
5. If you can, look up the "setting-up" exercises used by the soldiers; how many of these have you tried? How many can you do?
6. Get one of your friends to try with you the Syrian wrestling their father showed Ruth and Paul. Be sure to do it in the fresh air.

THINGS TO REMEMBER

Most of us admire strong, handsome people and athletes. There are four things a person must do to become an athlete The first is: to eat good food properly cooked; the second is to take plenty of sleep; the third is to keep very clean; and the fourth is to exercise in the fresh air.

There are many reasons why exercise is good for us. It makes the heart beat faster and harder. This sends the blood racing through the body to do its work faster and better. Exercise makes us perspire. Exercise makes us warmer than before. It makes us breathe faster and deeper. Exercise makes us hungry. It also helps the stomach to digest the food, if we do not take the exercise just after eating. Exercise makes muscles hard, large, and strong.

Meat is only another name for muscle. But when muscles are alive in an animal's body, they are very elastic, that is, they can stretch out and pull together with great force. They are fastened to our bones around joints. Without these muscles, to stretch or pull, we could not move. Muscles grow with use. Exercise, play, work, are ways to make muscle grow. A person with quick, well-trained muscle can overcome a much larger, stronger person, not so trained. Do you know anybody like that?

There are some important things to remember about exercise.

1. Many kinds of exercise are better than one kind, because different kinds of exercise use different parts of the body. So we should learn to swim, play tennis, skate, play ball, row, wrestle, dance; besides the things we do in gymnasium.

2. The best place for exercise is in the fresh air, either outdoors or indoors with all the windows open. We need much air when we exercise.

3. It is bad to exercise just after eating.

4. Clothes for exercising should be *loose;* shoes should be soft like gym shoes. It is well to bathe after active exercise, to remove the perspiration. Rub the skin very dry after the bath. Cover up, when you are hot, after exercising.

5. The more fun you have, the more good you get from your exercise.

6. *Work* in a garden, housework *with windows open,* any active work in fresh, clean air, is as fine exercise as many games are.

THINGS TO THINK ABOUT

1. If you want to be athletic, what four rules of training must you follow? Can you find out any other rules athletes follow, when they are getting ready to win a game or a "meet"?

2. This story tells us eight ways in which exercise does us good. How many can you name?

3. Why is it better for boys and girls, to play many kinds of games, than to do one kind of exercise in a gymnasium?

4. Suppose you had little time for play—what other ways of getting good exercise are there for you if you are a girl? a boy?

5. When and how must you take your exercise, to get the most good from it?

CHAPTER III

THE LAND OF SOMNUS

"I WONDER why it is," said Mother Weston, one evening, "that children never want to go to bed? Paul is just fighting to keep away the Sandman."

Paul, who really was very sleepy indeed, sat up and tried to look wide-awake. "There isn't any Sandman," he said.

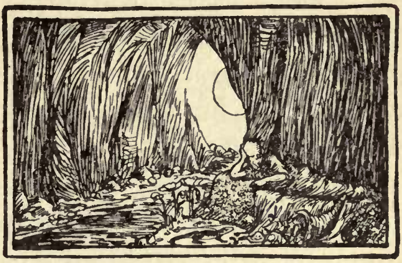
"Maybe not," answered Father, "but almost ever since the world began, people have made believe that there was one. Would you like to see an old, old picture of him?"

"Oh, yes!" cried Ruth and Paul together.

Daddy went to the book-case and brought out a big book full of pictures. "Oh," said Ruth, "I know some of the stories in that book. Miss Scott reads them to us. They are all about the Roman and Greek gods and giants and fairies."

"Yes," said Father, "one of the stories that the Romans used to tell long ago was about our Sandman—the god of Sleep, or 'Somnus,' as they called him. Here is an old picture of him. One of the Roman poets tells about the cave where Somnus slept. It was perfectly dark and still. No cock dared to crow, nor dog to bark. The only sound was the low murmur of the river Lethe, the river of forgetfulness. At the entrance of the cave, on a couch all sprinkled with stars, lay Somnus. And when a little Roman boy or girl was sleepy, their parents didn't say, 'Here comes the Sandman,' but 'Somnus is shaking his horn full of dreams over you.' "

Paul had been looking at the picture. "Yes," he said, "here is the horn with the dreams spilling out, and here are the poppies—but what is this lizard for?"



"The artist put that in," explained Father, "because lizards, frogs, woodchucks, and a good many other animals burrow into the ground and sleep all winter.

"Oh dear! How stupid!" exclaimed Ruth. "No skating or coasting, or Christmas presents! I'm glad I'm not a lizard."

"Why do we have to sleep at all?" asked Paul. "It's an awful waste of time."

"No, indeed," said Mother. "While you are asleep, your body is mending itself and growing and getting ready for the next day's work and play. You grow a great deal in your sleep—that's why babies and children, who are growing, need so much more sleep than grown-ups."

"How much sleep do I need?"

"Well," said Mother, "when you were a tiny baby, you slept most of the time. As you grew older, you took a nap in the afternoon and went to bed at six o'clock. Now that you are eight years old, you go to bed at seven and get up at seven."

"That makes twelve hours," said Ruth. "I go to bed at half-past seven, so that makes eleven and a half hours for me. Dorothy Frost says she never goes to bed until she wants to. Sometimes she doesn't go until ten o'clock."

"Yes," said Father, "and I think you said Dorothy was at the foot of the class, didn't you?"

"Yes, she is," admitted Ruth. "I never thought of it before, but I suppose her brain doesn't have time to get rested."

"Another thing to remember," put in Mother, "is to go to bed at the same time every night. You are much more likely to go straight to sleep."

Paul had been looking at the picture again? "Why does Sam—What's his name?"

"Somnus," said Mother, "that's the Latin name for Sleep."

"Why does Somnus sleep in a cave?"

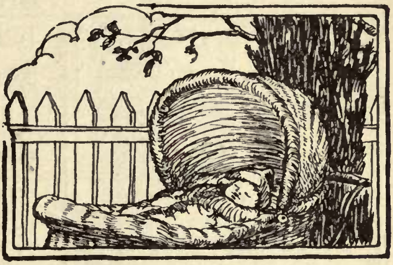
"Because it's so dark and quiet," replied Father. "You know how much nicer it is to sleep in a dark, quiet room. That's why Mother won't leave the light burning in your bedroom. And the stillness is one reason why we sleep so well in the country—for noise tires us even in our sleep."

"The only time I ever had to *try* to go to sleep," said Ruth, "was last Christmas Eve. I was so excited and so anxious to know what was in my stocking that I just couldn't go to sleep."

"I remember," laughed Mother. "It's hard to sleep when we are excited or worried. Sometimes, too, a very hearty dinner will keep you awake working to digest it. That is why I never let you children have meat or anything very hearty at night."

Ruth had been hunting in her school-bag, in the closet. Now she came out with a picture in her hand. "When I was at Aunt Louise's yesterday," she said, "she gave me a picture of the baby asleep outdoors in his new sleeping-bag. I almost forgot to show it to you. Isn't he charming?"

"Yes, and he is such a healthy, good baby," said Mother. "Aunt Louise thinks it's because he is outdoors almost all the time. It is very important to have lots of fresh air when we sleep. The very nicest thing is to sleep outdoors, but if we can't do that, the window should be wide open, top and bottom."



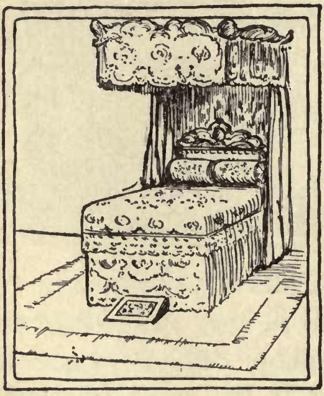
"I remember," said Father, "that when I was a little boy, people had an idea that night air was dangerous. Lots of people slept with their windows shut tight; but it always made me wake up headachy and stupid, so I decided that night air was just as good as any other kind."

"When *I* was little," said Mother, "I used to visit my grandmother in the country, and she had a great, big feather-bed, so high that I had to climb on a chair to jump into it. I used to jump as high as I could and come down plump, with the bed all puffed up around me."

"What fun!" said Paul.

"Yes, but the feathers were so hot to sleep on. I used to get all in a perspiration and didn't sleep half so well as on my mattress at home."

While Mother was talking, Father had opened a big book marked "History of France." "Here, children," he said, "is a bed that belonged to King Louis the Fourteenth of France."



"My, isn't it splendid!" exclaimed Ruth. "Just look at the red silk curtains and all the gold embroidery on the quilt!"

"I wouldn't want to sleep in it, though," said Mother. "Those curtains would cut off all the air, and I'm sure the quilt would be dreadfully heavy. Besides, how could you wash it and keep it clean?"

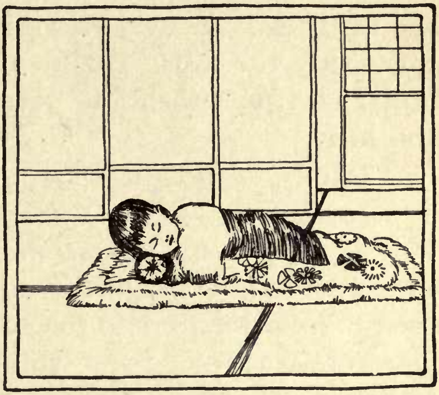
"And I wouldn't like those high pillows a bit," added Paul.

"Neither would I," echoed Father. "High pillows bend your neck and make your chest hollow and your shoulders round. It's much better to have a low pillow or none at all."

"But," laughed Mother, "perhaps we need not pity King Louis very much, for he had four hundred and twelve other beds, they say; so if he lay awake in this bed, he could get up and try another."

"In my geography," said Ruth, "there's a picture of a Japanese boy's bed. Here it is. Look, Daddy, he's lying on a piece of matting on the floor, with just this roll under his neck for a pillow."

"Sure enough," answered Father, "but he looks very comfortable. If he were on his back, he might have a nightmare, or if he were all doubled up into a ball, he might wake up stiff, but he's lying as he should, on his right side, with his legs out straight."



"It's an awfully funny bed," said Paul.

"No funnier than your bed would seem to him, Paul," said Mother. "The Japanese ways of living are not quite like ours, but they must be pretty sensible, for the Japanese are strong, clever, healthy people."

"Daddy," asked Ruth, "did you say that the juice of poppies could put people to sleep?"

"Yes, one sort of poppy is used in making opium. Opium will put you to sleep, but it is very, very dangerous, for a large dose will kill you. Besides, you can easily get into the habit of taking opium and not be able to do without it. Some people are silly enough to take medicine to help them sleep and such medicines usually contain opium. Some mothers even give the baby soothing-syrup and other medicine to make it stop crying and go to sleep."

"Our teacher read us a story about Rip Van Winkle," said Paul. "Some little dwarfs gave him some whiskey to drink and he slept for years and years and years."

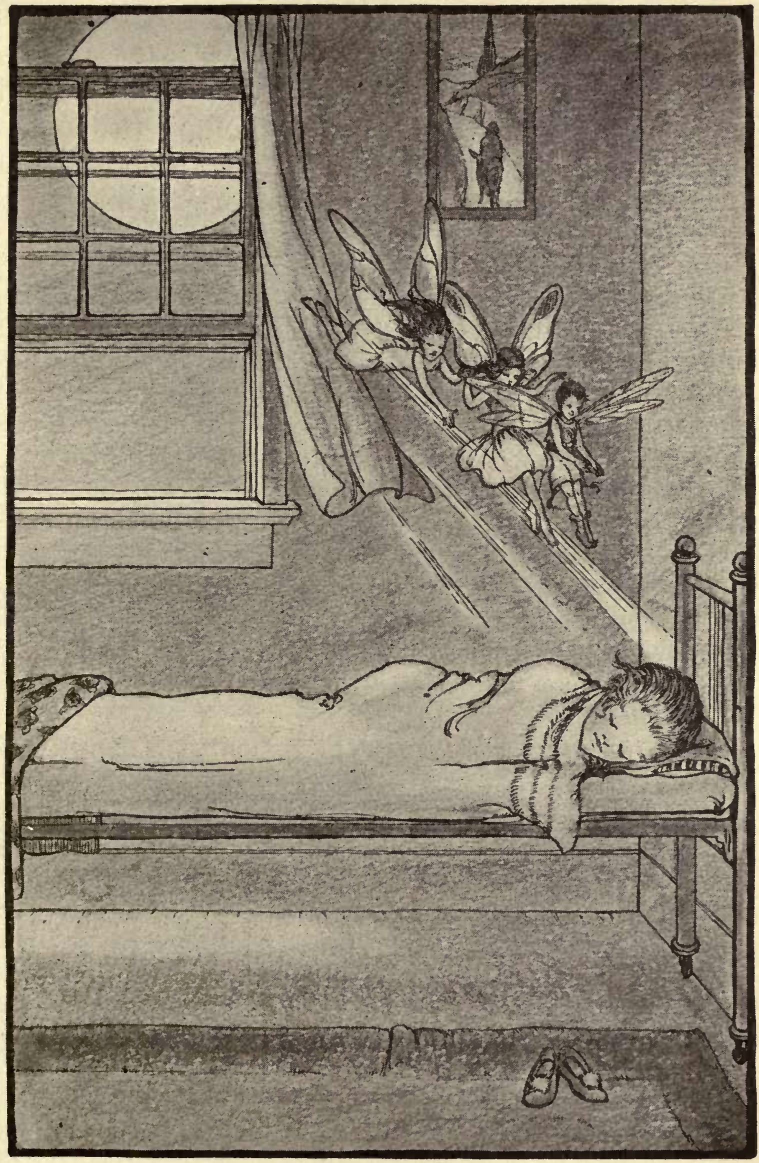
"I know some people," said Father, "who really do drink liquor to put them to sleep, but it is very bad for them. Instead of waking up fresh and bright, and ready for work, the people who use opium and liquor to put them to sleep wake feeling dull and heavy."

"Daddy," said Ruth, "where do we go when we sleep?"

"That is something that nobody, not even the wisest man in the world, knows, Ruthie. The Romans used to have an altar to the god of Sleep and pray to him to take care of them while they were in the land of dreams; but no one knows where that land is, or just how and why we go there."

"I think," said Mother, "the best way to have sweet dreams is to go to bed happy. When I get into bed, I think of all the nice things that have happened all day. Then I remember all the beautiful things that I have enjoyed—the sky and sunshine and flowers and music. Last of all, I think of all the people I love and I wish the whole world 'Good Night and Sweet Dreams.'"

Father took down from the bookcase an old book. "Here," he said, "is a picture of the dream fairies. You see the little girl has her window wide open so the fairies can come in. She has a nice, clean, white bed, with warm, light blankets and a low pillow."



"It's time for you two youngsters to go and get ready for the dream fairies, yourselves," said Mother.

"All right," answered Ruth, "and when I'm in bed, I'll try your plan and think of all the lovely things and people in the world. Then Somnus will shake some nice dreams out of his horn for me."

THINGS TO DO

1. Let us make a chart to show how much sleep we are getting. Get a long piece of paper, and measure off on it, a band ½ inch wide and 12 inches long. Mark off on it, the half inches. Every ½ inch will represent one hour. Call the first ½ inch, 1 o'clock at night; call the second ½ inch, 2 o'clock, and so on, until you come to 12 o'clock, noon. Call the next mark 1 o'clock in the afternoon, the next, 2 o'clock, and so on, up to 12 o'clock midnight. What time did you get up this morning? Put a mark at this time, on your scale. What time did you go to bed last night? Put a mark at this hour, on your scale. Now blacken the parts of your scale when you slept. Now you have a sleep-map. How many hours did you sleep? Is this enough?

2. How many children slept 8 hours? 9 hours? 10 hours? 11 hours? Draw a "sleep-tower" on the blackboard, 8 inches high and 1 inch wide. Under it, write the number of children who slept 8 hours. Do the same for 9 hours, 10 hours, 11 hours. Which sleep-tower had the most children in it? Which should have had the most?

3. These are your "Sandman" charts. Keep them on the board and put the date on them. Write under each tower, every day, the number of children who belong there that day. See how many children can belong in the 10-hour tower.

4. Form a "Sandman Brigade." To belong to it, each child must sleep 10 hours with the windows open, without

a light in the room. You might weigh yourself when you join the brigade, and after you have been a faithful member for one month, to see if you have gained in weight.

THINGS TO REMEMBER

We must have sleep, because during sleep we grow. We also rest the parts of the body which have been working during the day. Then, too, the body repairs during sleep any of its parts which have been worn out during the day.

Children need more sleep than grown people, because they are growing so fast. Children play and move about more than grown people, and need more rest. At six years children need from 11 to 13 hours of sleep. From six to eight years, they need from 12 to 10 hours of sleep; from eight to ten years, they need from 11 to 10 hours of sleep, and from ten to fourteen years, they need from 11 to 9 hours.

To get the greatest benefit from sleep we should try to do these things:

We should sleep long enough.

We should go to bed and get up at the same hours every day.

We should have our bedrooms dark and quiet.

We should do nothing to make us nervous, such as drinking tea, or coffee at any time, or going to "movies" at night.

We should eat only light suppers of easily digested, plain foods, as cereals, milk, fruit, bread and butter, never tea or coffee.

We should open wide at least one window, so as to have fresh air in our rooms.

We should have our bodies and sleeping clothes clean and sweet.

We should use low pillows, or none.

We should sleep on the right side, with the legs out straight, not on the back, or doubled up in a ball.

We should try to think about pleasant things before we go to sleep, so as to have pleasant dreams.

THINGS TO THINK ABOUT

1. Why do little babies need to sleep nearly all the time, while grown people need to sleep only about 8 hours?

2. What happens to us, if we often lose sleep, by staying up too late, or by eating or drinking harmful things?

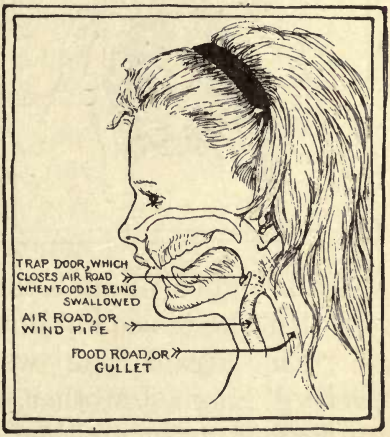
3. Our story tells us things we can do to sleep well, every night. Which do you do? Which do you not do? Cannot you try to do these things also, so as to do all nine? Your teacher will ask you this question again in a week, so you may know how much you have improved.

(Note. If there is a scale in the school, weekly weight graphs should be kept simultaneously with the sleep charts. Comparison of these graphs will prove effective in convincing under-weight children and their parents of the importance of proper sleep.)

CHAPTER IV

THE AIR-ROAD

IT was a cool evening and Paul sat on his father's knee eating popcorn before the open fire. Mrs. Weston was stroking puss, who lay curled in her lap. It was Ruth who had begged for the corn, and as Father said, she seemed to enjoy popping it over the fire almost as much as popping it into her mouth. She had just taken a rather large mouthful when she suddenly choked and coughed until Mother had to pat her on the back. When she could speak, she gasped, "Oh dear, that corn must have gone the wrong way."


TRAP DOOR, WHICH CLOSES AIR ROAD WHEN FOOD IS BEING SWALLOWED
AIR ROAD, OR WIND PIPE
FOOD ROAD, OR GULLET

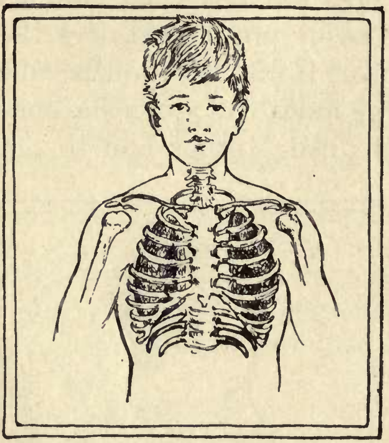
"What *is* the wrong way?" asked Paul.

"Why, I don't quite know," admitted Ruth. "What way can food go except right down into your stomach, Daddy?"

"Wait a moment," said Father, "and I'll draw you a map of the air-road and the food-road. Now, if your head and neck were made of glass, you could see the corn going into your mouth like this, being chewed fine and going on down this 'little, red lane.' That is the food-road and leads to the stomach. But here, at your nostrils, the air is being drawn in. It goes down back of your mouth and into this other lane. I suspect Ruth's corn started to go down this air-road, instead of keeping to the food-path."

"If it had kept on down that lane, where would it have gone to?" asked Paul.

"It would have finally gotten into Ruth's lungs and she might have died."



Ruth looked very serious. "Does everything breathe, Daddy?"

"Yes, everything that is alive! All the animals and even the trees and plants. The plants breathe through their leaves and the worms through their skin. It is only what we call 'higher' animals that have lungs."

"I'd like to see my lungs," said Ruth.

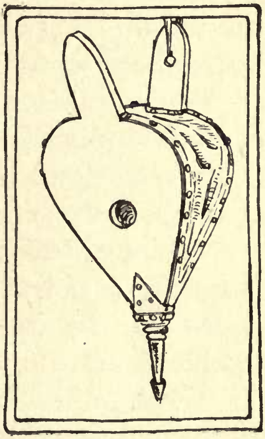
"I'm afraid you wouldn't think them very pretty," laughed Mother.

Father drew another picture. "Now here," he said, "are the lungs, with the air-road, or 'wind-pipe,' as it is called, going into them. They are full of tiny holes like a sponge, and the air rushes in and fills them, just as water fills a sponge. Put your hands on your sides and take a deep breath."

"Oh," said Ruth, "I can feel my lungs all swelled out; but what makes the air come out again?"

"Just as the water comes out of the sponge—by being squeezed. Here are your ribs, like a cage around your lungs. When the air is ready to be squeezed out, the ribs are pressed together. If you feel, you'll see how the ribs come together and the lungs get smaller."

The fire was getting rather low, so Mother picked up the bellows and blew until a bright blaze shot up. Father took the bellows and held it up. "There," he said, "these bellows work very much as your lungs do. When the sides are apart, like this, the air comes in through the nose of the bellows; when the sides are pushed together, like this, the air is pushed out through the bellows' nose, just as the air comes out through *your* nose."



Paul, with tightly closed mouth, and fingers pinching his nose together, was trying to see how long he could hold his breath. "I'll time you, Paul," said his Mother. So, watch in hand, she timed both children. Paul could hold his breath twenty seconds, while Ruth was delighted to find that she could hold hers twenty-five.

"That is doing well," said Father. "There aren't many people who can hold their breath very much more than thirty seconds; but the negro divers, who go down without any diving-suits, can learn, through practice, to stay under water two or three minutes."

"But," said Ruth, "I don't see *why* we need air."

"I might talk a long time and use a great many long words, Ruth," said her Father, "without making you understand any better. We need air because Mother Nature made us that way. Air helps our bodies to turn the food into flesh and blood and bones, just as the air from the bellows helps the fire to burn the wood. If it has no air, the fire goes out. If our bodies have no air, they die."

There was a silence broken only by pussy's loud, contented purr.

"When I was little," said Ruth, "I used to think that pussy was snoring."

"How unfair to pussy," laughed Mother. "She is much too polite and sensible to snore. People who snore breathe through their mouths, and you never see pussy cats doing that."

"Bill Jones breathes through his mouth," said Paul. "It makes him look awfully stupid and the boys all call him 'Fly-catcher.' "

"Perhaps," said Father, "he can't help it. You know there are a sort of lumps called 'adenoids' that grow up here in back of your nose and block the air-road, so you have to open your mouth to breathe."

"Of course, it looks stupid, but does it really hurt to breathe through your mouth?" asked Ruth.

"It certainly does," replied her Father. "The nose has a special sort of lining and tiny hairs to catch the dirt. Blow your nose on a dusty day and just see how much dust it catches. Then, too, the air going through the long, crooked passages of the nose gets warmed. If you breathe through your mouth, you swallow all the dirt and your mouth and throat get dry and uncomfortable."

"Can adenoids be cured?" asked Ruth.

"Oh, yes, the doctor can take them out easily enough. But lots of children breathe through their mouths just because they have gotten into the habit."

"I watched Grandpa when he took his nap, yesterday," put in Paul. "His mouth fell wide open and he snored like a saw-mill."

Mother smiled. "I'm afraid poor Grandpa was lying on his back. That is very likely to make you snore. When I was a little girl, I used to sleep on my back and it made me snore dreadfully, so my older sister tied a spool on a string and fastened it around my waist so the spool came right in the middle of my back. It cured me of sleeping on my back, I can tell you, and I have never snored since."

"Most people," said Father, "breathe with only part of their lungs. You ought to practice blowing every bit of air out of your lungs and then slowly let the air in through your nose until you can't hold any more. If you do this eight or ten times at the open window every morning, before you dress, it will make you feel fresh and ready for the day. Your lungs need to be washed with fresh air, just as you wash your face with clean water."

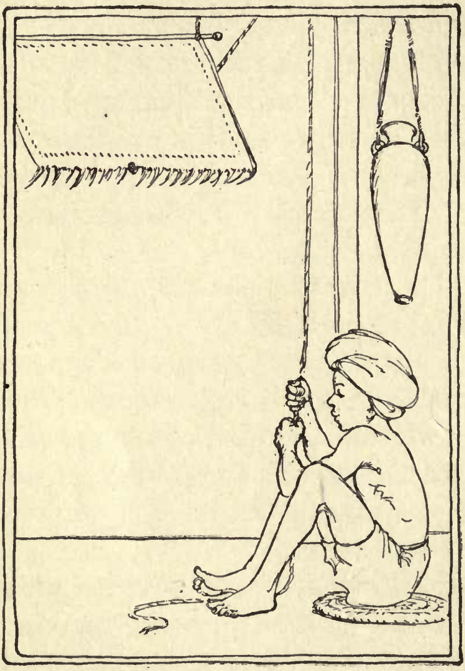
"Why do this before we dress?" asked Paul.

"Because sometimes our belts are a little tight," replied Mother, "so our ribs and lungs can't swell out as they should. That's one reason why I always see that you children have loose clothing."

"Isn't blowing soap-bubbles good exercise for our lungs?" asked Ruth. "Because I need a new soap-bubble pipe."

Father laughed. "It looks as if I'd have to buy one for the sake of your lungs, Ruthie," he said, "for soap-bubbles are very pretty and very good lung-exercisers, especially outdoors in the clean air."

"Isn't the indoor air clean?" asked Paul.



"That depends," said Mother. "I've gone into stores and moving-picture houses, and even into some homes where I could *smell* the dirty air. You see, air that has been washing a lot of lungs is just as dirty as water that has washed a lot of faces."

"Sometimes," said Ruth, "it gets smelly at school, but Miss Scott opens the windows at the top and bottom. She says the good air comes in at the bottom and the bad air goes out at the top."

"That is a very good way to freshen the air," said Father, "and it also helps if the air is kept moving with some sort of fan, so that the warm, used air is moved away, and cooler, unused air is brought to us. When I was in India, years ago, we had great fans like *this* and water-jars like *that*." He sketched and showed the children this picture. "A little Hindoo boy used to sit and pull the fan so as to keep it going, for hours at a time. They call the fan a 'punkah.' The water-jars are made of earthenware. They are filled with water and hung in a window or door, so that the air blowing past them is made moist and cool."

"Is that why we always keep pans of water on the top of the steam radiators?" asked Ruth.

"Yes; hot, dry air is bad for one's nose and throat, so it is well to keep the air damp with pans of water."

"Daddy," said Paul, "does smoking really hurt you? Bill Jones says his father smokes and he's going to start pretty soon."

"It surely does hurt," Father replied, "and I do hope Billy will leave it alone. You see, Paul, tobacco has a poison in it, and the man or boy who smokes is breathing in poison instead of the good, clean air that he needs. It's especially bad for children, for it makes them stupid in their lessons, poor at baseball and other games, and keeps them from growing. When Mr. Jones was a boy, people did not realize what harm tobacco does, but now they know, and any boy who smokes is a goose."

After a moment, Ruth remarked, "Miss Scott says perhaps we can have an open-air class and have lessons up on the roof."

"That will be fine," said Father. "Here is a picture of Dr. Clarke's little girl in her open-air class suit."

"She looks like an Eskimo," said Ruth.

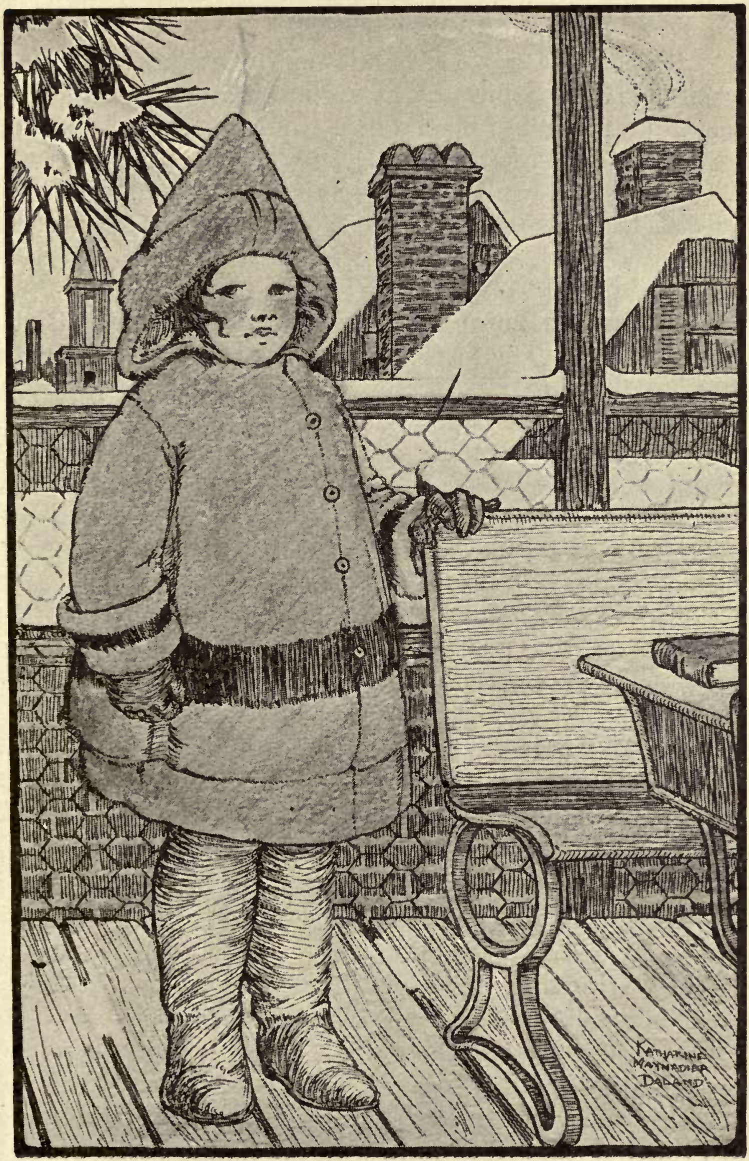
"Yes," said Mother, "but the fresh air keeps the class feeling so well that I hear they do better work than any other class in school."

"I wish we'd have a class like that," sighed Ruth.

"Well," said Mother, "as a start toward getting more fresh air for you, I'm going to have a carpenter build a balcony. Your bed and Paul's can be put out there and you can sleep all night in the good, fresh air."

That night, after Mother had opened the window wide, top and bottom, had tucked her in and kissed her good-night, Ruth lay listening to the wind in the elm-tree outside her window. As she fell asleep, it seemed to be singing to her:

"Sweet and low, sweet and low,
Winds of Heaven come and go.
Cold and fierce, or warm and mild,
Breathe them deeply, Nature's child,
At your work and in your play,
All the night and through the day,
For the winds of Heaven bring
Life and joy to everything."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THINGS TO DO

1. Sit *tall*. Put your hands on your sides and take a deep breath, then put one hand on the front wall of your chest, and one hand on the back, and take a deep breath. Feel your lungs swelling out. How *much* can they swell?

2. Let your teacher take your chest expansion. Put it down in a place where you won't lose it, because you will want to look it up in a few months to see if you have improved it.

3. Bring a bellows to school and play with it, till you understand it. Then see that it works very much as our breathing machinery works.

4. Make a little house out of a chalk box, so as to see how air moves when we ventilate properly. Stand the box up on its narrow end. Cut away the grooves in which the lid ran, and smooth the edges. On each of the two sides, bore two round holes for windows, one near the bottom, one near the top of the box. Find four corks that will close these windows. Bore another hole in the roof of your house, and get a lamp chimney to put over it. Can you think why? Now have someone, the druggist, perhaps, cut a piece of glass, the exact size of the opening of your box. Fasten this on with a strip of gummed tape, for a door. Arrange a latch. (A rubber band fastened to the glass door with gummed tape, can be slipped over a tack on the side of the box.)

To use your house, fasten a candle on the floor, under the hole in the roof. Light it. Close all your windows with your corks. Close your door tightly and watch the candle. After it has gone out, light it again, but this time, try opening different windows. Hold a piece of smoking incense at the open windows, and notice where the smoke goes. Find out which combinations of open windows, make the candle burn best. Find out *how* the air moves each time. This will explain why the candle burns best.

THINGS TO REMEMBER

Every living thing must breathe. Plants breathe through their leaves. Some animals breathe through their skins. Fish breathe through gills. But most animals have lungs. Our lungs lie in a sort of cage, made of bones and muscles. If these muscles are strong, we can make the cage or chest large. Then air rushes into the lungs and fills them as full as the size of the cage permits. When the bones and muscles of the chest come together again, the air in the lungs is squeezed out. This work our bodies do regularly for us, day and night. It is important to have strong, well developed chest muscles for this work.

We cannot live without air any more than the candle in your experiment could burn without it. But we must be sure that the air goes into the body by the right road—through the nose, *not* through the mouth. The little hairs lining the nose filter out much dust and dirt. The moist, sticky lining of the nose catches more dust, perhaps some germs. It also moistens the air for us. There are thousands of tiny little blood-vessels, inside the nose-lining, which are like very small steam pipes in their work. They heat the air on its way to the lungs. If the passage-way from nose to lungs is stopped by adenoids, the nose cannot help us these ways. Therefore wise doctors think enlarged adenoids should be removed.

Deep breathing through the nose helps to exercise our chest muscles. It makes the blood rush faster through our lungs. It makes us feel fresher and stronger. It helps us to stand straight and tall. These things help our bodies to get what they need from the air. The more hours we spend in fresh outside air, sleeping, working or playing, the stronger we become.

If the windows are screened to keep out insects, the night air in your bedroom can never hurt you. People cannot catch cold from too much fresh air.

THINGS TO THINK ABOUT

1. How can you enlarge your chest expansion?

2. How would a large chest expansion help you in swimming? Running? Skating? Practice your rules for one month, and see if you have improved your chest expansion.

3. Can you show that the bellows works as your breathing machinery does?

4. Find out how and where the fresh air enters your schoolroom. How and where the used air leaves. Find out these things about your bedroom. Your living-room at home. Is it the best way? How could it be improved?

5. Why is it good to breathe through the nose?

6. How will it benefit you to take ten deep breaths before the open window each morning, before you dress?

7. If you have not an outdoor sleeping place, what is the next best way to sleep?

8. Do lumbermen, or sailors, have many colds? Why? Will you catch cold by going outdoors in any weather, if you keep your body warm and dry?

CHAPTER V

The Witch, Indigestion

"I had a queer dream last night," said Ruth at Sunday breakfast, looking up from her saucer of oatmeal. "I dreamed that I found a castle made of bricks of sweet chocolate. All the chairs were made of candy and the round tables were pies. The garden was full of marshmallows and lollipops, and there was a fountain of soda-water."

"My! Did you eat it all?" asked Paul.

"I was just beginning when an old witch came out of the castle and caught me and I woke up."

"There aren't really any witches, are there, Daddy?" said Paul.

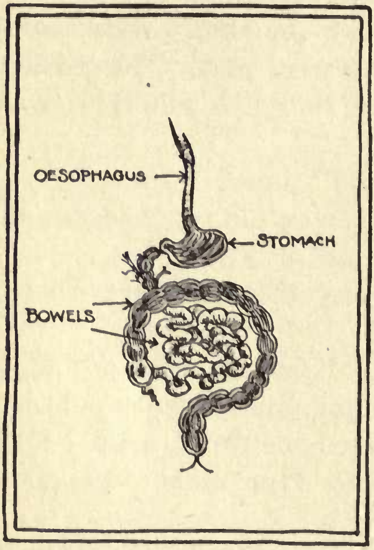
"Well," Father smiled, "when I was your age, I once ate a whole cocoanut pie, and I was caught by a terrible old witch. She tied me up in a knot and stuck pins in me, all night. Her name was Mrs. Stomach Ache."

"Oh, tell us a story about her, Daddy," pleaded Paul.

"Go on eating your oatmeal and I will," said Father. "Mrs. Stomach Ache and her brother, Good Digestion, live in a little house like this, called the stomach. Leading down to their house, is a long road, like this, through which all the food goes. At the entrance to the road is a mill where the food is ground fine."

"I know!" exclaimed Ruth. "You mean our teeth."

"Yes," answered her father. "Our teeth grind the food very fine, just as a mill grinds the wheat into flour. When the teeth start chewing, the saliva begins to run into our mouths and mix with our food. Sometimes, just thinking of something nice to eat, makes the saliva start."



"Wait a minute, Daddy," begged Paul, "I want to try it." For a moment he was quiet. Then he nodded his head excitedly. "I thought of molasses candy—a nice sticky piece—and my mouth is just as wet as can be."

"Well, after the food is all ground up and wet, what happens next?" said Ruth.

"Next," said her Father, "it travels down the 'red lane' to the stomach. If it has been ground fine enough and if it is simple food, well cooked and clean, Mrs. Stomach Ache will sleep peacefully and her brother, Good Digestion, will churn the food into a sort of thick soup. Then he will push it into the long, winding lane which we call the bowels. All around them is a mass of tiny tubes full of blood. The food from the bowels soaks through into them and is carried in the blood all over the body to help you grow and make you strong and warm. Any part of the food that is of no use to the body is pushed on down and passes out as waste. It is very important that the bowels should be emptied every day at a fixed time—otherwise the waste may poison and make you ill."

"Why did Mrs. Stomach Ache wake up and get mad when you ate the cocoanut pie?" asked Paul.

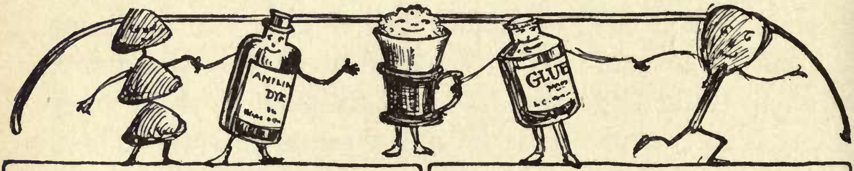
"Because I had abused her brother, Good Digestion. That always makes her angry. In the first place, I ate the pie in the middle of the afternoon, when Good Digestion had just finished working over my dinner and was tired and wanted to rest. Then, too, I was afraid of being caught, so I gobbled the pie in great hunks and it wasn't half chewed. Besides, it was a very rich pie, with lots of cocoanut and sugar in it. Things that are very sweet and rich, or heavy and greasy, take longer to digest. Another trouble was that all the time I was eating the pie I was afraid and unhappy because my conscience pricked me—and you know that if you are feeling unhappy, or tired or worried, it upsets Good Digestion. But perhaps Mrs. Stomach Ache would not have minded—she is really very patient—if I had not eaten so *much*. But it was a pie big enough for a whole family! Mrs. Stomach Ache taught me such a lesson that my Mother said I didn't need any more punishment. But I've never wanted to look at a cocoanut pie since."

They all laughed at Father's disgusted face.

"But, Daddy," said Ruth, "does Good Digestion object to our eating *anything* between meals?"

"He doesn't usually mind a little ripe fruit, if you chew it well," said her father, "but cake, candy, soda-water, pickles and such things upset him so that when dinner or supper-time comes, you aren't hungry. Besides that, they are bad for your teeth."

"That's like a picture that we saw when Miss Scott took us to the County Fair last week," said Ruth. "Miss Scott said the bottles of glue and dye were put in to show that cheap candy and soda and ice-cream were full of all kinds of bad stuff."



Tommy had a "tummy" which he
stuffed with lollipops,
Chocolate and soda, taffy and
gum-drops.

Tommy has dyspepsia now,
Bright's Disease and gout,
"And the Gobble-uns'll get *you*, ef you
don't watch out!"

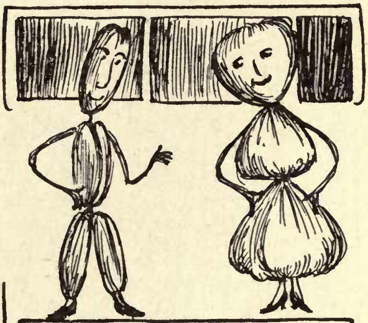
"But I do love candy," sighed Paul.

"Of course you do, Sonnie," said Mother, "and pure, clean candy is good for you—but you mustn't be nibbling at it all the time. I've decided that you and Ruth may make molasses candy, or something like that, every Saturday afternoon. You must not touch it between meals, but you may each have a few pieces every day for dessert."

"Goody!" shouted Ruth. "It's lots more fun to make it than to buy it."

"I never knew before," said Paul, "that candy is good for us. I always thought everything nice was bad for me."

"Dear me, no!" said Father. "The only trouble is that most children eat cheap, poor candy, or eat it between meals, or are piggy and eat too much of it. Our bodies need different kinds of food to use in different ways. Some kinds of food are made into muscles and bones. Some kinds help us to keep warm and strong, so we can work and play. We mustn't eat too much of any one sort. That is why we never have just meat for dinner. Mother gives us also some potatoes, or rice, or macaroni, and some sort of green vegetable, like string beans, or spinach, or lettuce."



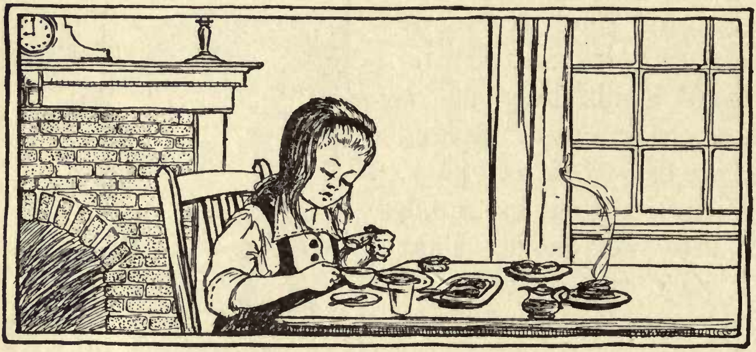
Said dapper Mr. Date to dried
but sweet Miss Fig,
"Why is it Master Sammy is
so healthy and so big?"
Said she, "Upon cheap goodies,
he never spends his money;
He loves raisins, figs and dates,
maple sugar and pure honey."

"Rover likes candy, too," said Ruth, "and so does the pony."

"Yes," said Mother, "and bears like sweet things. Once I saw a bear who had dug some wild honey out of a hollow tree. He was sitting on the ground licking his sticky paws just like Paul with a piece of taffy."

They all laughed until Paul began to look a little red and uncomfortable. "Never mind, Son," said Father, "it only shows that you and Mr. Bruin know what is good. Now here are a picture and verse that tell not what sweets are bad, but which sweets are the best to eat."

"Dorothy Frost eats candy and pickles under her desk-lid at school, all the time," said Ruth. "She lives right next door to school, but she never gets up till eight o'clock. She told me yesterday that all she had time to eat for breakfast was a cup of coffee and a doughnut."

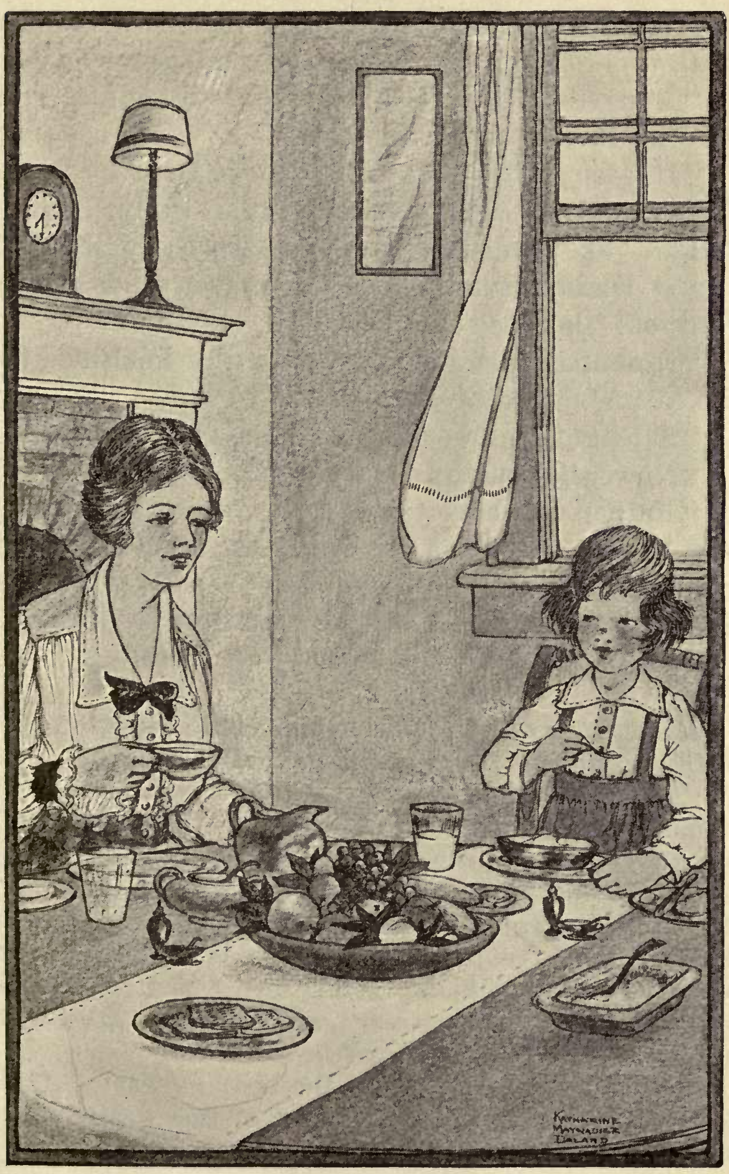


"Is Dorothy good at her lessons?" asked Mother.

"Oh, no!" Ruth shook her head very hard. "She's almost the dullest girl in the class. And at recess, she just sits round and talks secrets instead of playing tag with the rest."

"What are you drawing, Father?" asked Mother.

"Just a little sketch of Miss Dorothy," said Father.


KATHARINE
MAYNADIER
DALAND

"What's the name of the picture?" demanded Paul.

"I suggest," said Mother, "that we call it 'Dull Dorothy Devouring Doughnuts.'"

"It's too bad to make fun of poor Dorothy," said Father. "We might call it, 'Pale Polly Prefers Pickles,' or 'Foolish Fannie Fancies Fried Food.'"

"O Daddy, what crazy things you and Mother think of!" laughed Ruth.

"Now make us a picture of a nice healthy little girl eating a good breakfast," said Paul.

"All right," agreed Father, "here she is."

"Now what shall we call her?" cried Ruth.

"Father will have to name her some other time," said Mother. "If you children don't stop talking, it will be dinner-time. Not another word, or we shall all be late for church."

THINGS TO REMEMBER

Many parts of our bodies help in good digestion. Our teeth must grind food very fine. Saliva must mix with it. After this, it goes to the stomach. Muscles in the stomach mix up the food still more. All the time it is being digested, if it is clean, well cooked, wholesome food. Then it is pushed into the bowels or intestines. Around the intestines are thousands of tiny blood-vessels. The digested food from the intestines soaks into these tiny blood-vessels. The blood-vessels then carry the food all over the body to keep us warm and help us to grow. The undigested part of the food is of no use to us. It is pushed on, and passes out of the body as waste. If the bowels are not emptied every day, of this waste, it may make us very ill.

Remember to do these things, because they help us to have good digestion. Eat meals at regular times, including the school luncheon. Sweets between meals are harmful. Eat slowly enough to chew well. Eat simple foods. Never eat too much especially of sweet, rich food. Try to be happy and cheerful at meals. A good laugh helps digestion.

Good foods for children are cereals, fruits, vegetables, milk, eggs, fish, cottage cheese, a little meat, butter. Candy is good, *if it is pure,* such as homemade candies, and if it is eaten *a little at a time as dessert,* not on an empty stomach. Such foods make muscle and bone, keep us warm, and protect us from sickness.

Bad foods for children are coffee and tea; fried foods of all kinds; rich foods with much sugar or fat in them; meat more than once a day.

THINGS TO THINK ABOUT

1. Why do some doctors say that we cannot have good digestion without good teeth?
2. What happens to our food before it is ready to make our bodies warm and help us to grow?
3. Why is it one of our health rules, to have a bowel movement every day?
4. You want to have good digestion. What six food and eating rules can you follow to have it?
5. Pretend that you have a family of boys and girls to feed. Make a market-list of foods you would buy, to keep them well and strong. What things would you *not* let them have?

CHAPTER VI

Stoking the Engine

"I USED to say," said Paul, looking up from his toy train of cars, "that I'd be a policeman when I grew up, but I think I'd rather be an engineer. I wish I had a real steam-engine."

"Engines cost a good deal to begin with," said Father, "and it costs a lot more to keep them fed and in running order. It's about all I can do to provide coal and wood for the four engines we already have in this house."

"Four engines!" exclaimed Ruth. "O, Daddy, you're fooling again. What do you mean?"

"I mean just what I say," said Father. "You and Paul, Mother and I are all engineers and live in our engines—only they are flesh and blood and bone, instead of iron and steel."

"And we don't eat coal and wood," added Ruth.

"No," admitted Father, "but our bodies are really very much like engines, for all that. The engine can't move unless there is water in the boiler, a fire in the furnace and unless all the parts are well-oiled and in good repair. In the same way, our bodies can't keep warm and we can't run and play and work, unless we have plenty of water, plenty of good food, and unless our bodies are in good order."

"You promised last Sunday to tell us more about different kinds of food, Daddy," said Paul.

"So I did. Well, you know that there are a good many things that you can burn in a fire, but some things burn better than others, don't they?"

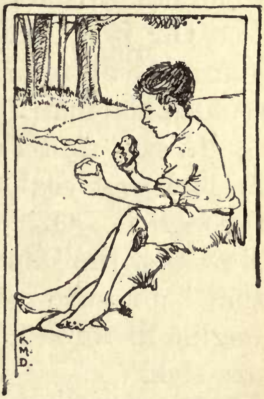
"Oh, yes," said Paul. "Paper and wood and coal burn best."

"And oil," put in Ruth.

"Yes," said Father, "all these things help to make a good fire. Now, to keep up the fire that warms your body and makes it strong enough to work and play, you need cereals, sugar, potatoes and every sort of food that has starch in it. Then, too, you need the oils, such as butter, or oleomargarine, olive oil and fat meat. But there is one great difference between the iron engine and our live, flesh and blood ones—the iron engine never gets any bigger and can't repair itself, but our engines do."

"What kinds of food help us to grow?" asked Ruth.

"Milk, cheese, eggs, fish, meat, peas, beans and peanuts," said Father. "You see now why we need to eat different sorts of things. Here is a snap-shot that I took of a little Italian boy yesterday over near Putnam's woods, where some Italians are camping. He had a bread-and-cheese sandwich in one hand and a raw tomato in the other."



"I don't call that a very nice luncheon," sniffed Paul.

"It's much nicer than the pickles and ice cream-cones that some children lunch on," said Father. "The bread will feed his fire and keep little Tony warm. The cheese will help to build up his muscles and bones and make him grow, and the raw tomato is excellent for 'oiling his machinery' and keeping him in good health. Uncooked vegetables and fruit and raw milk contain different kinds of salt that we seem to need to keep well."

"Dorothy's little sister got typhoid fever from uncooked milk," said Ruth.

"Very likely," Father replied. "It's very important that all food, especially milk, should be perfectly clean. Do you remember that time last winter when our furnace didn't work right?"

"Oh, yes," cried Paul, "I went down cellar with you and you found a lot of stuff in the coal and you scolded the man for sending us bad coal."

"Yes," said Father, "instead of good, pure coal, he had sent coal that had pieces of slate all mixed through it. Of course, it did not make a good fire. Now just the same thing happens when we put food that isn't pure into the furnace in our bodies. Our engine-fire doesn't burn well, and we say that we are sick."

"People oughtn't to be allowed to sell bad food," said Ruth, decidedly.

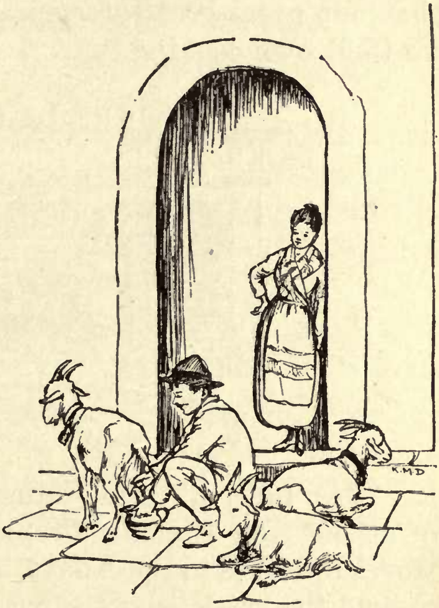
"No, indeed," agreed Father, "and most cities and states have men to examine the milk, meat, fruit, vegetables, fish, canned goods—everything we eat—to make sure that it is pure and clean. Every year these inspectors order millions of pounds of food to be thrown away."

"And do they punish the men who tried to sell the bad food?" asked Paul.

"Yes, everyone who breaks the 'Pure Food' Law is fined or put into prison. Years and years ago, a man who watered his milk was punished by having the milk poured through a funnel into his mouth until he cried for mercy. A man who sold bad butter had the butter mashed down over his head and had to stand in the sun until the butter melted."

"Goodness!" said Ruth, "I should think that would cure anyone of anything!"

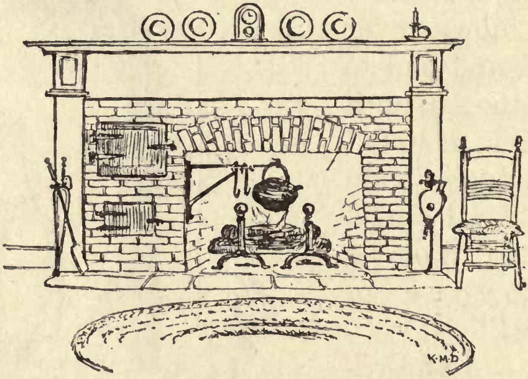
"In Italy," Father went on, "you can be perfectly sure of having unwatered milk. Here is a Naples milkman. He drives the goat right to your door and milks her into your pitcher."



"Are milk and butter the only things to eat that are likely to be bad?" asked Paul.

"I'm sorry to say that they aren't," said Father. "Many people are so silly as to think pretty food must be good food. So candy, canned vegetables, tomato catsup and pickles—like the pink lemonade at the circus—sometimes have dye put into them to make them a bright color. It's wise to buy food from someone who keeps only pure food. The best way of all is to eat very little ready-cooked stuff and do all your own cooking, so far as you can."

"In history class," said Ruth, "Miss Scott told us that our great-great-great-grandmothers used to do all their own cooking."



"Yes, indeed," said Father. "Here is a picture of an old New England fireplace. They didn't have stoves like ours in those days. See, there is a big hook to hold the kettle over the fire and here at the side is the great, old-fashioned oven, big enough to bake a dozen pies at once."

"I wish we had pie oftener," sighed Paul. "I think I'd have liked to live in the house with that oven."

Father laughed. "You would have had to work for your pie, Son. Those old-fashioned houses were busy places. They made their own butter and cheese, raised their own vegetables and preserved or dried them for the winter. They raised their wheat, rye, oats and buckwheat and carried them to the mill to be ground into flour. I'm afraid they ate a good deal of pie and pickles and fried things that are hard to digest, but they worked hard outdoors all day, and that made their stomachs stronger than ours."

"Why aren't fried things and pickles good for you?" asked Paul.

"Because," said Father, "grease makes a hard crust all over the food, and so the stomach has more trouble to soften it and get it ready to go into the blood. And all the vinegary things are bad because vinegar makes food tough and hard to digest."

"A little Syrian girl has just come to school," said Ruth. "Yesterday, she gave me a piece of Syrian candy, but it tasted horrid. I had to spit it out."

"I hope," said Father, "that you didn't hurt her feelings, when she had been so kind in sharing her candy. And you know, Ruth, we eat things that the Syrians think 'horrid'—oysters, for instance. It all depends on what you are used to."

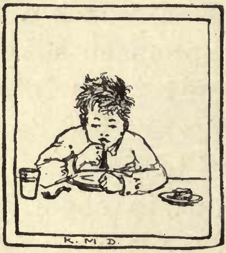
"I think," said Ruth, "that I'd like to be a cook. It's such fun to mess around in the kitchen."

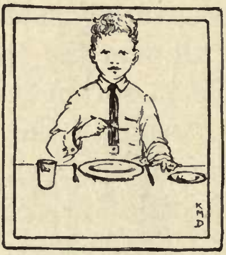
"I'm glad to hear you say that, Ruthie," said Father, patting her on the back. "Really good cooks are the best of citizens, for they help to keep the rest of us in good health. But you must not be like an old colored cook I once knew. Maria made the most delicious biscuit and griddle-cakes, but once I went into her kitchen and I never ate her cakes again."

"Why?" asked Paul.

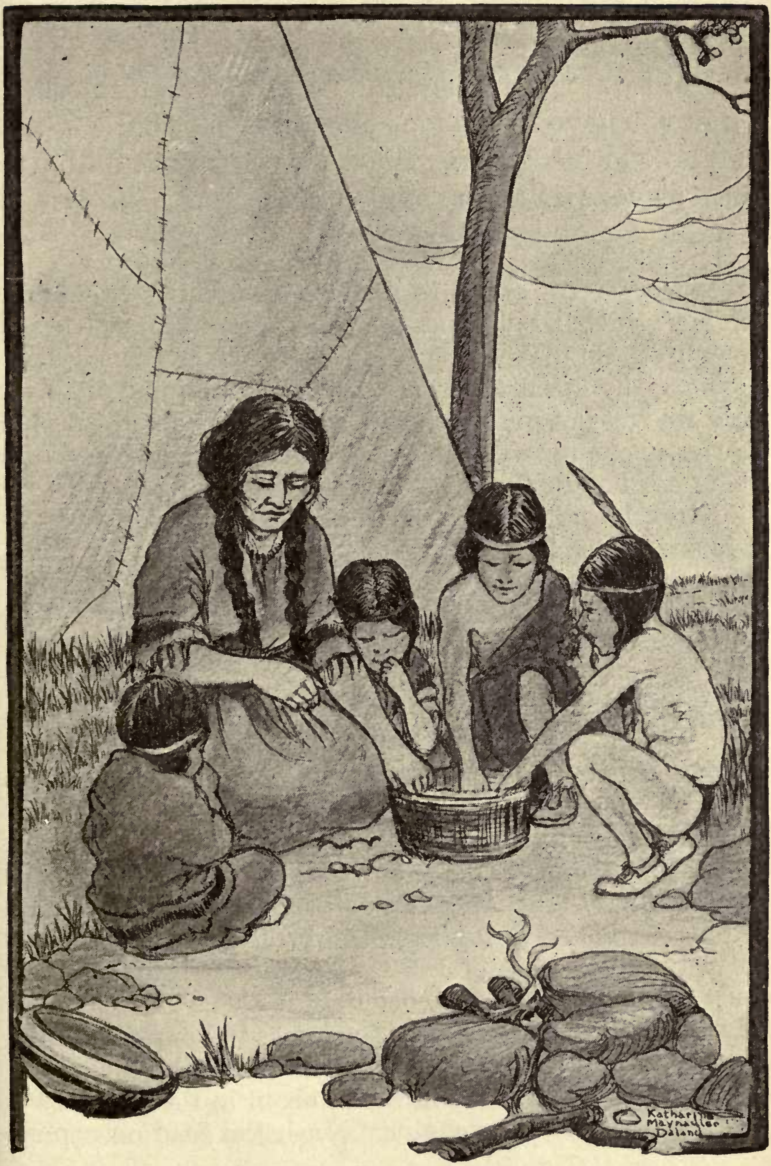
"Because she mixed the cakes in a greasy, dirty dishpan. She never washed her hands or cleaned her pans or her ice-box. The floor was a sight, and the cat was drinking out of the milk-pitcher. And yet, she cooked for a respectable family."

"That's worse than an Indian family I once saw," said Mother, who had just come in. "They were sitting in a circle on the ground with a bowl of meat in the middle and everyone 'put in his thumb and pulled out a plum,' like Jack Horner. But the dish really looked clean and the Mother made the children wash their hands before they ate."





"That's more than all white children do," remarked Father. "Here's a picture of how two boys I know sit at table. This boy eats like a little dog, with his head almost in his plate. His elbows stick out so that they poke into his neighbors' ribs." Paul looked very uneasy, but Father went on. "This other boy must be you, Paul. See how straight he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sits, and I'm sure he chews quietly and doesn't poke his neighbors."

Paul was smiling again. "I think," said Mother, "that you have talked long enough about your engines and how to feed them. Suppose you go out and give them a good run before supper-time."

THINGS TO DO

Since we are going to find out something about our engine's fuel, let us make a food-book. Make a scrap book first. On the outside paste a picture of the healthiest boy or girl you can find. Magazines contain fine pictures. In it we will put pictures of the foods we learn about, and stories about the experiments we may make, in studying about our body's fuels.

First, let us find out something about starch, because it is one of our best fuels. Get together a potato, a knife, a glass of water, and a piece of clean thin white-goods, Now we will "make" starch. Peel the potato. Now scrape it very fine and tie up the scrapings in the cloth. Now squeeze the cloth in the water, till the water gets milky-white. Let this milky water stand until the next day. What you then see at the bottom of the glass is starch. Pour off the water carefully, and let the starch dry. Does it look like the corn-starch mother uses? Put some of your starch in the glass again, add a little water and a few drops of iodine, which your teacher will give you. Only things that contain starch turn this color when iodine is added. Bring samples of other foods to school to test. Make lists of the foods that are fuels for our body engines, because they contain starch. Put the story of your experiment, and the food lists in your food-book.

Try to find how corn-starch is made in the factories.

Find out what foods have fat or oil in them. for they, too, are fuels for our engine. Mash the food on a piece of thin smooth paper and after it is dry look for a grease spot. Try some nuts, some fruit, some milk, and any other common foods you want to test. Put your results in your food-book.

Try to find out where the fats and oils we use come from.

If your teacher can arrange to take you to a sanitary dairy, go with her and see how much trouble is taken to *get* good milk, to keep it clean, and to deliver it to customers in safe condition. How is the milk cared for at your house, to keep it sweet and safe?

With your mother, go to the grocer's, to the butcher's, to the baker's. Without saying anything, look around and notice everything that is done to protect the food for sale from dust or dirty fingers. Could you suggest any more care to take?

Add to your food-book pictures of the new *fuel* foods you have learned; the new *growth-making* foods; the new *protection* foods you have learned.

THINGS TO REMEMBER

Our bodies are engines which, like steam-engines, need fuel and water. The fuel of our bodies is food. The foods that give the most fuel are fats, starchy foods, and foods containing sugar. The chief starchy foods are cereals, such as oats, wheat, rice, corn, rye, barley (including things made from them), potatoes, peas and beans. Fruits and many vegetables contain sugar. Besides the fat in butter, milk and cheese, wholesome fats are found in bacon, some meats, and nuts.

Some foods build bones and muscles. The best are milk, cottage cheese, eggs, fish, and meats. Peas, beans, and oats are also in this class. Still other foods are called *protection* foods. They contain things that keep the parts of the body working well. These foods are milk, fruits, and vegetables. Milk, fruits, and vegetables are so important that they should be eaten at least once every day. A child should have at least a pint of milk a day.

Our bodies, unlike engines, can grow and repair themselves. Foods enable them to do this. But foods must be pure. This means they must be clean when brought to the stores; that the stores must be clean and handle foods in a clean way, protecting them from dust, flies, and dirty hands. All this is to prevent germs from growing in food and spoiling it. Foods must contain no harmful coloring matter, as cheap candies sometimes do. Food must contain no material without food value, or injurious substances to prevent it from spoiling. Pure food laws are made by our government to protect us from these things.

The best foods can be spoiled by bad cooking, wrong habits of eating, and careless ways of keeping food at home. Here are some good rules to help us get the greatest benefit from good food.

1. Prepare food for keeping, and put it in a cool place, covered from the air.
2. Be sure to wash your hands, before preparing food for others, or eating it.
3. Eat every day something from each of these groups.
    a. Milk.
    b. Cereals, including bread.
    c. Butter.
    d. Fruits and vegetables.
    e. Meat, fish, eggs, cheese.
4. Don't eat fried food, pickles, tea, coffee.
5. Eat pure, simple sweets, at the end of your meal, not between meals.
6. Eat with the best manners you know. Your food digests better if you eat slowly. Chew well, sit straight, and season it with smiles.

THINGS TO THINK ABOUT

1. Why did we send candy and sweets to the soldiers during the war?

2. Why did some of the posters say: "Fats are fuels for fighters"?

3. What foods will make our bodies grow? Repair themselves?

4. From what five groups of foods must we choose something to eat, every day? Do you know why?

5. What are pure foods? Why are pure food laws needed? Do you know if your city has to destroy foods not fit to eat? Why?

6. Why do you suppose babies can live for nearly a year on milk only, with perhaps some orange juice?

7. What should grocers do to keep pure the foods they sell? What should we do at home to prevent foods we buy from spoiling before we have eaten them?

8. Are table-manners only for show? What health reasons can be given for eating in a mannerly way?

CHAPTER VII

How We are Wrapped Up

The very nicest way to celebrate the Fourth of July is to go on a picnic. That was what all the Weston family decided. Father said he knew just the right place, and sure enough, after a short carride and a still shorter walk, he had brought them to a lovely, little, mossy brook.

Paul and Ruth had been so excited over going on a picnic that they had not eaten much breakfast. The result was that after luncheon all that was left was one orange and a lot of tissue paper. Paul was vainly trying to feed the paper to Pussy, who always went to family picnics, just like a little, furry dog. "Oh, dear," he cried, "if Pussy were only a goat! Why did you wrap up all the sandwiches and cookies, Mother?"

"To keep them from getting dried and dusty."

"But you didn't wrap up the oranges or eggs."

"No, because Mother Nature had wrapped them already. She is the most skilful wrapper in the world. She does up the trees and plants and fruits and animals and people, each in a sheet of her very finest wrapping-paper."

"What do you mean, Mother?" said Ruth. "I never saw any paper that Nature had made, and I'm not wrapped up, except in my clothes."

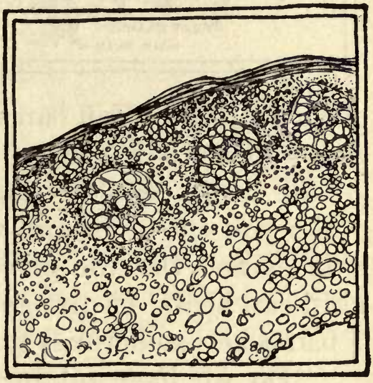
Mother picked up Ruth's stocking, for she and

Paul had been wading in the brook. She turned it inside out. It was sprinkled with little, white flakes. "There, Ruth," she said, "there's part of your wrapping that has worn off."

"Oh," said Paul, "that's just wee pieces of skin."

"Yes," replied Mother, "the kind that Nature wraps around people and animals, we call 'skin.' Miss Orange calls hers her 'peel' or 'rind,' and Mr. Birch Tree, over there, calls his his 'bark.' But though the tree and the orange and I all have different kinds of skin, they are a good deal alike."

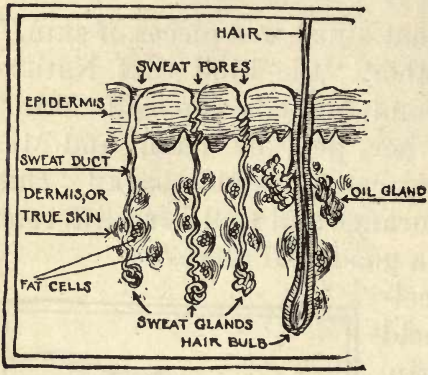
Ruth had been peeling the orange. She held up a piece of the skin. "But my skin isn't a bit like that," she protested.



"Isn't it?" said Mother. "Let's see. Here, on the inside of the orange peel is a thick layer of yellowish white, and outside that is a thin layer of bright yellow. If you look closely, you can see tiny holes all over it. If you squeeze it, some oil comes out. Let's look at the cut edge of the orange skin. Do you see the pockets, or holes, where the oil lies, close under the outer skin?"

"Well, it doesn't look a bit like my skin," insisted Ruth.

"That is because it is so much coarser, and because you never see anything but the outer side of your skin, Ruthie," said her Father. He sketched for a moment. "There, children," he said, "is how your skin would look if it were ever so much heavier and coarser and if you could peel off a piece and look at the cut edge of it, as you did with the orange."



"Why," said Ruth, "it *is* something like the orange skin."

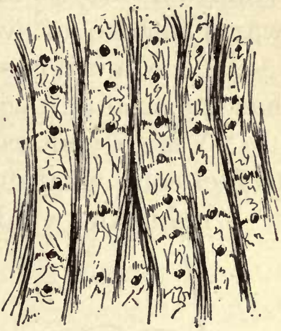
"Yes," said Father, "here is the thin, outside, colored skin. It has no blood in it and feels no pain. You can run a fine needle through it and take a stitch without hurting. This outside layer of the skin keeps dirt and germs out. That is why, when you cut or in any way break the skin, Mother washes and ties the place up so carefully, until the skin can heal. If dirt gets into a cut, it often makes a bad sore—sometimes it is very dangerous."

"Do we have oil in our skins, Daddy, like the orange?" asked Paul.

"Yes, way down in the skin. If you hold the back of your hand between you and the light, you'll see that it is covered with tiny hairs. Each of these has two oil-bags. You can see one of them in the picture, on the root of a hair. The oil feeds the hair and keeps the skin smooth and soft."

"Yes," said Ruth, "my hair gets awfully greasy, sometimes, and often my nose is all shiny."

"But what are those curled-up balls with corkscrewy things coming out of them?" asked Paul.



"Those," Father replied, "are where the perspiration comes from. There are about two and a half millions of them in your body. If you could put the tubes all along, end to end, they would make a pipe twenty-eight miles long. On a hot day, the perspiration-bags or glands work hard pouring out the perspiration to bathe us and make us cooler. It comes out through tiny holes in the skin. Under the magnifying glass, you can see them in rows, like this."

"Well," Paul remarked, "if the perspiration bathes us, why do we have to keep taking baths all the time?"

Mother laughed. "Paul has so much important business to see to that he hates to waste time on useless matters," she said. "Listen, Paul. Did you ever see me empty a pan of greasy dish-water into the kitchen sink?"

"Why, yes," said Paul, wondering.

"And then what did I do?"

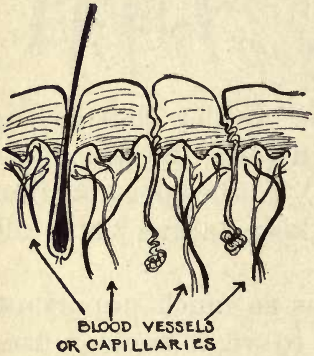
"You washed out the sink with clean soap and water."

"Yes," said his Mother, "and that is just what happens to your skin. The two and a half million little sweat-glands collect dirty waste matter from your body and pour it out in the perspiration all over your skin. Then the water in it evaporates, but the dirty, poisonous stuff stays and mixes with the oil and the loose bits of skin, and forms a dirty film all over your body. That's why we need a good all-over warm bath about every other day."

"I see how it cools us in summer," said Ruth, "but has the skin any way of warming us in winter?"

"Yes; if you are sitting by the window and begin to feel cold, what do you do?"

"I shut the window," said Paul.



"Just what your skin does. All these little holes, or 'pores,' as they are called, are like millions of tiny windows, through which the body partly breathes. If we are in the cold air, the skin closes its windows, to keep the heat in. It also squeezes up the tiny blood-vessels which lie close under the skin, like this. That keeps the blood from coming too near the outside and getting cold. But on a hot day, or when you take a warm bath, the skin-windows open and the little blood-vessels are full, close under the skin."

"Why is it, Mother, that you won't let us take our baths right after meals?" asked Ruth.

"Because just after meals, the stomach calls out, 'Come along, Blood, I need you.' Then the blood hurries to the stomach. But if you step into a tub of hot water, the blood is called to the skin. If you step into a cold bath, the blood rushes away from the skin and then when you get out, rushes back to it again, harder than ever. In either case it doesn't stay near the stomach where it is needed to help digest your dinner."

"I never knew before," said Paul, "that my skin had so much to do. What else does it do, Daddy?"

"Well," said Father, "besides being a suit of armor to keep out germs and dirt and other enemies, and besides being fitted with windows and water to make you hot or cold, and besides acting like the kitchen sink to carry away a lot of dirty waste matter, the skin is an Information Bureau."

"What's that?" asked Paul.

"I know," said Ruth. "It's a place where they tell you anything you want to know."

"Yes, the skin tells whether things are hot or cold. If it didn't, we might get burnt or frozen. It warns us that pins are sharp and nutmeg-graters rough. We don't learn as much as we might from our sense of touch. Here is a picture of a lady named Helen Keller." Father drew from his pocket a photograph. "When she was a great deal smaller than Paul, she became blind and deaf and dumb, but she listened to everything that her skin said to her through her finger-tips, she learned the deaf-and-dumb alphabet, and became a very wise and useful woman."

Ruth was silent for a moment trying to think what it would be like to have to learn everything through her fingers. At last, she said, "Now that I know what

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a lot my skin does for me, I'm going to do more for it. Should I take a hot bath every day, Daddy?"

"No, not unless you have been perspiring a good deal, or getting extra dirty. Take a warm, soapy bath about every other day, winding up with a splash in cold water, to close the skin-windows. Then every morning take a cool dip, shower, or sponge bath, just to keep your skin working well, and rub yourself until the skin is red. Be sure to have the bathroom warm, and if you feel chilly, rub and exercise until you are warm. The more air, water and sunshine you give your skin the better."

Ruth looked thoughtfully at the bit of orange-peel. "Isn't it funny," she said, "that this orange and that birch-tree, and Pussy and I are all wrapped up so beautifully. Mother Nature must think we are pretty valuable to take such care of us, mustn't she?"

THINGS TO DO

Ruth examined an orange skin. Suppose you do so. Cut a section through the thick rind of an orange or a lemon. Look at the edge and see if you can see what Ruth saw.

Examine the skin on the back of your hand. A lens will help if you can get it. Find the hairs. In the palms of your hands, find the rows of tiny openings of the sweat glands. Notice how elastic and soft, yet tough, skin is. Now look at the picture in the book, and find out how the skin is on the inside.

Make this little experiment to see why baths are necessary. Get a piece of window glass. Polish up one part of it. Rub a little oil on the next part. Stir up a teaspoonful of salt in half a cup of water, and when it is dissolved, put half a teaspoonful of the salt-water on the third part of your glass. Let the glass lie by an open window till the next day. Which part of the glass is cleanest? Do you see why our faces gather so much dirt? Why bodies and clothes sometimes have bad odors, if not washed often enough?

Try this, to find out how the skin helps cool off the body. Drop some water on the stove or hot radiator. What becomes of the water? What drove the water away? If you can get a thermometer, first read it, as it hangs in the room. Then dip it in water and wave it dry. Read it again. Why do you think the temperature shown is lower than it was when the thermometer was dry? What becomes of the water on the thermometer? Where did the heat come from, to evaporate the water?

Dip your hand in water, and wave it dry. Does your hand feel cooler? What has become of the heat that was in your hand before? This is why perspiration cools us in summer.

Watch your skin when you take your warm bath. Before the bath, notice the color of your skin. Invert a cold dry water-glass tightly over your skin, to see if much water is given off, as a film inside the glass. After your bath, see if the color of the skin is the same. See if more or less water is given off. This shows how a warm bath calls the blood to the skin. Does it tell us anything about the proper times to bathe?

THINGS TO REMEMBER

1. Skin helps us in three ways. It prevents harmful things from entering the body. It helps keep us from getting too warm or too cold. It tells us about our surroundings, through our sense of touch.

Skin has an outside layer, with no blood-vessels or nerves. It keeps germs out of the body.

Skin contains hairs. These have two oil glands each, which make the oil which keeps the skin and hair soft and pliable. These hairs grow from the deep, live layers of the skin. In these deeper layers are nerves and blood, to feed the skin.

Skin contains sweat glands. These gather much water and some waste from the blood and pour it out on the surface of our skin as perspiration. When the perspiration dries or evaporates, it takes heat away from the body and we are cooler. Baths are necessary to wash away that part of perspiration that does not evaporate.

When we take baths, hot or cold, or when we exercise, the blood goes to the skin. For this reason we should not do these things when any other part of the body needs the blood. Neither heavy exercises, nor baths, should be taken just after or before a meal. This includes swimming. To take the best care of the skin, one should bathe it for cleanliness, with warm water and good soap, about every other day. Then take a cold splash, and rub the skin hard with a rough dry towel. The best time for the warm bath is just before bed. Take a cool sponge every morning, lasting not more than three minutes. Rub your skin till it is warm and red. This will exercise your skin and help avoid colds.

The only *sure* ways to have a beautiful skin are these: eat good food, digest it well, get rid of the wastes and keep the skin clean.

THINGS TO THINK ABOUT

1. Why is a nurse so careful to clean out cuts and scratches before tying them up?
2. How does the skin protect us from germs?
3. What do you know about how skin is made?
4. Why do we need to take baths? To change our underclothing?
5. Have you noticed an unpleasant odor sometimes

in a schoolroom full of girls and boys? What may cause it? What can we all do to prevent such odors?

6. How does perspiring in summer help us keep cool?

7. How do we take cleansing baths to get the best results? What is the best time to take warm baths?

8. Have you tried a cold sponge bath in the morning? How does it make you feel? Why are cold baths in the morning good for us?

9. What did the ancient Greeks and Romans think about baths? Were the Greeks good athletes?

10. Find out how the Indians took baths.

11. Can you give a recipe for a beautiful skin?

CHAPTER VIII

THE CLOTHES WE WEAR

"MOTHER," said Ruth, "do you know, to-morrow is Rover's birthday? He'll be two years old. What shall we give him, to celebrate?"

"Let's make him a birthday-cake," said Paul—"a chocolate one, big enough for him to give us each a piece."

"Let's buy him a new collar," suggested Ruth, "a shiny red leather one."

"Huh!" sniffed Paul. "Rover's no lady-dog—he doesn't care about silly clothes!"

"Clothes aren't silly, are they, Mother?" cried Ruth.

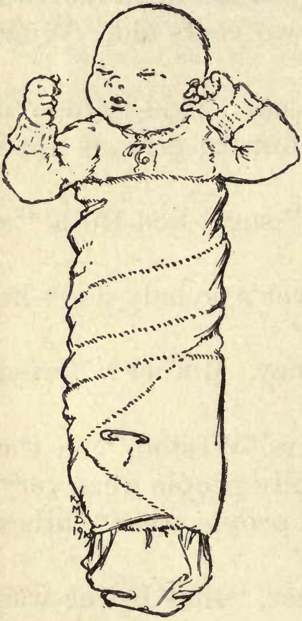
"That all depends," said Mrs. Weston, "on the people who wear them. Some silly people wear very silly clothes, but some sensible people wear clothes that are sensible and beautiful."

"I should say," put in Father, "that Rover was sensible, for his clothes suit him perfectly."

"Yes, I can never find a suit for Paul that is as nice as Rover's," said Mother. "No tailor or dressmaker ever makes such sensible and beautiful clothes as Mother Nature does."

"What do you mean, Mother?" asked Ruth.

"Well," answered her Mother, "Rover's coat of hair fits him perfectly, doesn't it? And yet it is loose enough for him to run and leap and play. That is how clothes ought to be. I try to buy clothes for you children that fit and yet are loose, so as not to interfere with your games. Tight collars and belts and shoes are very uncomfortable and also very bad for you. They keep the blood from running fast through your bodies and prevent your breathing and moving easily. The best way is to have no high, tight collars, no snug belts, no 'round' garters, but to have all the weight of the clothes hang from the shoulders."



"Here is a picture," said Father, "that Dr. Clark gave me. This baby is named Marietta, and her parents came from Italy. They have a way there of tying their babies up into stiff little bundles like this. Poor little Marietta can't kick at all. She can scarcely move her legs and feet. Dr. Clark is trying to get little Marietta's Mother to dress her like an American baby, so she can kick and grow strong."

"Dorothy Frost is almost twelve, and she says she's going to put on corsets, pretty soon," said Ruth, "so as to have a nice figure."

"I suppose," remarked Father, "that Miss Dorothy will also wear a ring in her nose, as some stylish African ladies do."

"Oh, gracious, no!" cried Ruth. "Of course she won't."

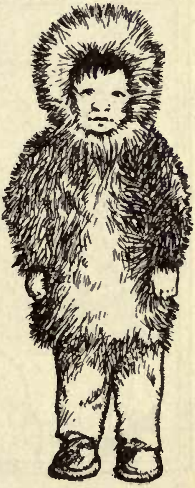
"Well," said Father, "a nose-ring would really be more sensible than a corset. It wouldn't interfere with her breathing, or injure her at all, but a tight corset will squeeze her lungs so she can't breathe well and press on her liver and stomach so she can't digest her food properly, and will keep her from growing and developing."

Paul had been smoothing Rover's silky ears. "I know another thing about Rover's coat that is nice," said he. "It is warm, but it isn't heavy. Overcoats are so heavy, Mother—that's why I hate to wear one."

"Yes," said his Mother, "in winter we need warm clothes, but it is a great mistake to have them too heavy. Mother Nature is very wise about that—she keeps the birds warm by giving them feathers that are—oh, so light—and yet as warm as toast."

"I wonder," said Mr. Weston, "how you'd like to be an Eskimo boy, Paul, and dress in a suit of fur?"

"There's a picture of one in my geography," said Ruth. "Here he is. I suppose the fur keeps him warm, but it looks very clumsy."

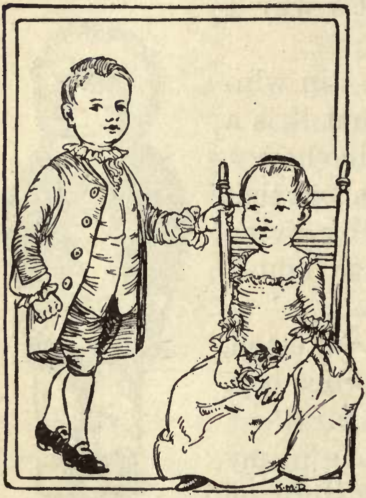


"I believe, inside their snow huts, they take these heavy fur suits off," said Mother, "just as I always tell you children to take off your hats and coats and rubbers when you come indoors. It is especially bad to wear rubber rain-coats and overshoes indoors, because they have no tiny holes in them, as cloth has, and give the skin no chance to breathe.'

"I didn't know we breathed through our skin, Daddy," said Paul.

"We breathe mostly with our lungs and through our noses," said his Father, "but we breathe, too, through our skins, and clothes made of rubber, or even leather, are not good for us, because they do not let the air get through to our skin."

"I wonder," said Mother, "whether the children would not like to see a picture of George Washington's step-grandchildren."

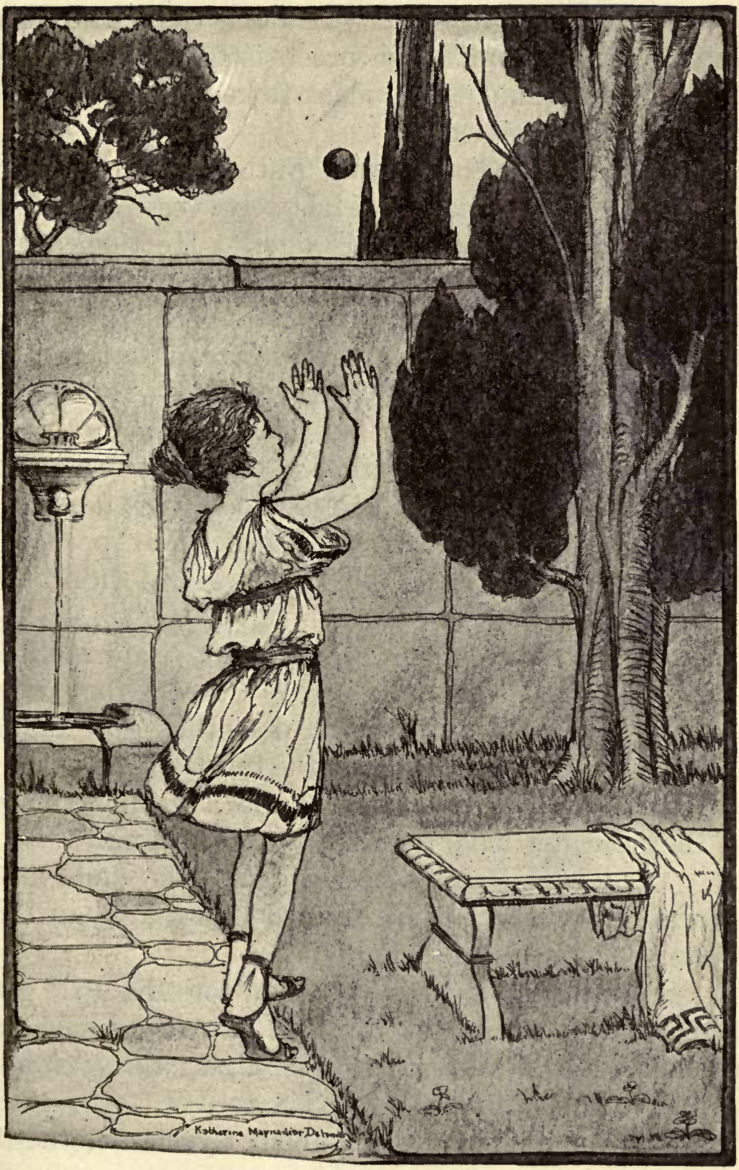


"Oh, yes!" cried Ruth and Paul together.

Mother went upstairs and returned with an old-fashioned book in her hand. She opened the book, with a child leaning over each of her shoulders. "There," she said, "are Nellie Custis and her brother George, Martha Washington's grandchildren."

"Why," said Paul, "they look just like a grown-up lady and gentleman."

"Yes," laughed Mother, "in those days children were dressed exactly like their parents. Why, when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little Nellie was only four years old, General Washington sent to London for corsets, stiff petticoats and gloves for her, and even a mask to keep her little face from getting freckled."

"In this same book," said Father, "there is part of a diary written by a little girl twelve years old, about one hundred and fifty years ago." He turned the pages and read, "I was dressed in my yellow coat, black bib and apron, black feathers on my head, my paste comb, all my paste, garnet, marquasett and jet pins, together with my silver plumes—my locket rings, black collar round my neck, black mitts, two or three yards of blue ribbon, striped tucker and ruffles and my silk shoes completed my costume."

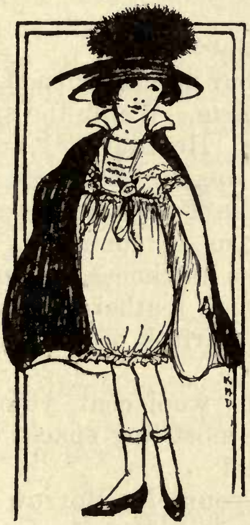
"Oh, goodness!" giggled Ruth, "how perfectly dreadful she must have looked! I'm glad I didn't live so long ago."

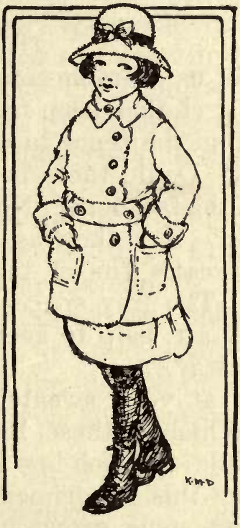
"But far, far longer ago than that," said Mother, "in the beautiful country called Greece, they wore the most sensible and beautiful clothes ever made. Here"—she took a book from the table—"is a picture of a little Grecian girl. Greece was a warm country, so they did not have to wear much clothing."

"Yes," said Paul, "she looks as if she could have some fun. I'd rather be dressed like that than like those poor Custis children."

"So would I," agreed Father, "for this little girl is dressed somewhat as Mother Nature dresses the animals. Her clothes are loose, light, comfortable, simple and beautiful."

"And another nice thing about Grecian clothes," said Mother, "was that they were easy to care for. They weren't always having to be pressed and have buttons sewed on and elbows mended. By the way," she added, "I think someone forgot to hang up his clothes last night. I found them lying in a heap on the floor in Paul's room. They were getting all wrinkled and, worse yet, they were not getting aired out, ready to put on in the morning. If Father buys the clothes and I mend them, I think Paul might at least try to keep them clean and neat."





Paul looked very meek. "I'll try," he said.

Father had been sketching. "Now here," he said, "is a picture of Dorothy Frost as she is and as she might be. Which do you call a really well-dressed little girl?"

Ruth looked hard at the pictures. "Well," she said, "of course, she looks more stylish this way, but she looks a lot prettier and more comfortable dressed *that* way, and I think her clothes——"

"My, my, my!" exclaimed Mother, "there's the clock striking eight! Night-clothes are the only clothes for us to discuss now."

The experiments two and three here described have been modified from some described in "Hygiene as Nature Study," by Gregg. (Pub. by author, University Place, Nebraska. Neb. Wesleyan College.)

THINGS TO DO

1. Let us examine some of our animal friends, and see how their clothes keep them warm. Watch the sparrows perched on the fence in winter. How do they hold their feathers? Could there be tiny spaces filled with still air between the feathers? Notice the coats of horses and cows in winter. Are they as sleek as in summer? Is your dog's or cat's fur of the same thickness, summer and winter? The tiny spaces between feathers or fur, filled with still air, help to keep the warmth of the body from getting away.

Look at your sweater, your wool coat, your cotton shirt. Which of these, has the most tiny spaces between the threads? Which is warmest?

2. Try this experiment on yourself. Borrow a raincoat from some grown-up person. Put it around you without putting your arms in the sleeves. Get some one to button it up, then tuck it in around your feet, and also put the sleeves in the pockets. Stand in it for about five minutes. How do you feel? Why do you feel this way? Without opening the coat, let some one lift it off over your head. How does the air smell? Can you see now, why

clothing should have tiny spaces in the material, so air may pass through?

Examine the outer surface of a pair of rubbers, a pair of patent leather shoes, a pair of leather shoes, a pair of canvas shoes. Which have no tiny pores on the surface? Which has the most? Which is best for summer wear? Why?

3. If you wish to see which materials will take the heat away from the body fastest, you may try this experiment. Collect a thin piece of flannel or woolen goods, pieces of cotton, linen and silk of about the same weight. Find a hot radiator or stovepipe. Cover each of four fingers with a fold of one of the four pieces of goods. Now put each of the four covered finger tips with equal firmness on the hot surface. Which finger gets hot first? Then which material is carrying the heat from the radiator to your hand fastest? Which, then, would carry away the heat from your body fastest? Which would be good summer materials.

4. Make collections of all the different materials we use for clothes, as rubber, leather, cotton. From what animals or plants do these materials come? Can you collect pictures of the places, the animals and plants from which we get such materials? Can you find pictures showing the costumes worn by different people in different countries? Do the pictures tell you any stories of how these people live?

THINGS TO REMEMBER

Clothes are for protection and for beauty; they must not prevent any muscle from moving freely, nor press on any blood-vessels, nor prevent any organ from doing its work.

In winter, clothes must hold in the body's heat. They must absorb perspiration so as to keep the skin dry. They must let the perspiration evaporate slowly, so that the body will not get chilled. They must let air circulate between the skin and the outside. Clothes must be light in weight. The clothes we wear next to our bodies should always be very clean and sweet. In our climate, knitted cotton underwear is warm enough for most healthy people, except babies and old people. Besides, it can be washed easily. Wool is good for outside clothes. Our winter dresses, coats and trousers should be brushed and hung up neatly when not worn. They then last longer and look well until worn out.

In summer, clothes should let the body heat escape easily. They, too, must absorb perspiration, and let it evaporate, as winter underclothes do. Cotton and linen are good summer materials. Clean clothes are always cooler than dirty ones.

At night our clothes need to be aired well. Clean stockings every morning will make our feet comfortable. Our shoes, also, should be aired at night. They should be cleaned and dried after they have been wet, in order to make them last longer.

Rubbers and raincoats should be taken off as soon as possible after we enter a house to stay a while.

As all of us wish to appear well, we try to choose clothes of pretty and becoming colors, and good shapes. But we are as foolish as uncivilized people in other countries, if we allow fashions to make us buy clothes that are too tight, too stiff, too warm, too long, too short, or too costly. Do you know any bad fashions like this, nowadays? Do you think your clothes are sensible?

THINGS TO THINK ABOUT

1. Why is a dog's winter suit a good suit of clothes for him?

2. Suppose you could choose your own clothes this winter, what articles would you buy? What materials? Why?

3. How do you care for the clothes you take off at night? What is the best way?

4. How do Eskimos dress? Why do they need such clothes? Why would these be bad for us?

5. What implements do we need to keep our outer clothes in good condition? How many of these articles do you use on your clothes? How should we care for our underclothes?

CHAPTER IX

A Pair of White Horses

"Daddy, why didn't Aunt Louise come with us to-day?" asked Ruth.

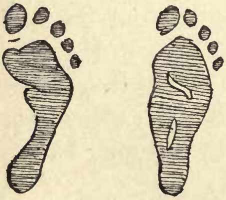
She and Paul both had hold of Father's hands, and the three of them were having great fun, wading in the lake, while Mother sat on the sandy bank sewing.

"I think," said Father, "that it was because her horses couldn't travel so far."

"O, Daddy," protested Paul, "you're always calling things make-believe names. Auntie hasn't any horses. What do you mean?"

"I know," laughed Ruth. "Mother told Auntie we were coming to the beach to-day on 'Shanks's Mare!'—that means on our own feet. But what's the matter with Auntie's feet, Daddy?"

"Why, I believe she has a case of flat-foot."



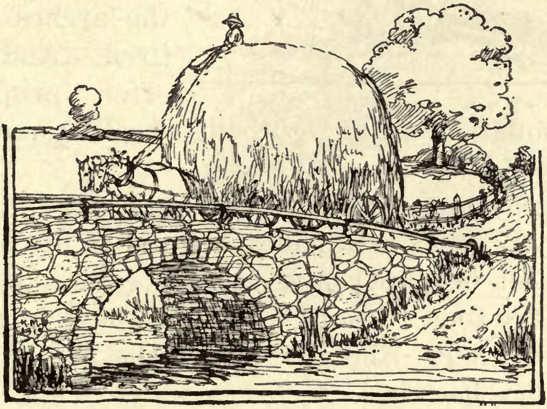
"I never heard of flat-foot. What is it?"

Just then, Mother called, "John, those children have been in the water quite long enough." So Father, Ruth and Paul sat down beside her and scrubbed their feet dry in the warm sand.

"What's flat-foot, Daddy?" insisted Paul.

Mr. Weston pointed to Ruth's foot-print in the wet sand and drew the print of another foot beside it like this. "There," he said, "if Ruth's foot were flat, it would make a print like *this,* but the inner side of the sole arches up in the middle, so it makes a print like *this.*"

Ruth looked at her bare foot. "So it does arch," she said; "I never noticed before. What keeps it from falling down and being flat?"



"Do you remember," Mother asked, "the stone bridge that we saw to-day, with the great load of hay crossing it?"

"Oh, yes," cried Paul, "it was such a pretty arch, with the stones all fitted together."

Father had taken out his pencil and made a sketch. "There, children," he said, "your foot-arches are made of bones, instead of stones, but they are a good deal like the arched bridge, and they carry a pretty heavy load."

"What makes the arch fall, so people get flat feet?" said Paul.

"Often," Father replied, "people are born so. Sometimes babies are allowed to walk when they are too little, and the bones of the arch are still soft and cannot bear the weight. Some people stand or walk all day long and the arches get too tired. And very often people are silly enough to wear tight, high-heeled, uncomfortable shoes."

"I know how to get comfortable shoes," exclaimed Paul. "When I need shoes, I stand in my bare feet on a sheet of paper and Mother runs a pencil all around my foot. Then I don't even have to go to the store with her. She just shows the pattern of my foot to the shoe clerk."

"But," objected Ruth, "a shoe might fit and yet not be comfortable at all. I never saw how Cinderella could possibly dance in glass slippers."

"Nor I," agreed Mother. "I want my shoes to be just as soft and bend just as easily as possible."

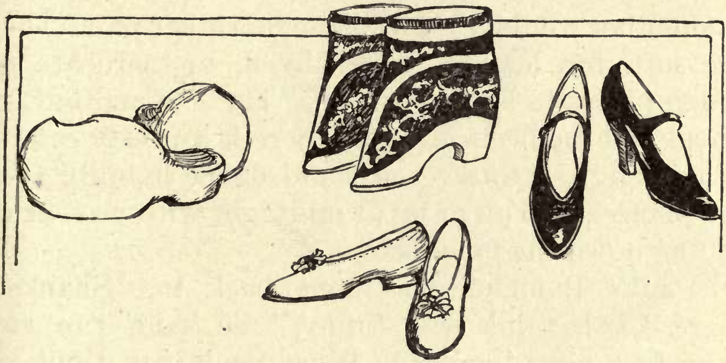
"If you had glass shoes, you wouldn't have to wear rubbers," said Paul.

"No," replied Father, "but glass and rubber, though they keep the wet out, keep the perspiration in. That's why, if you wear your rubbers in the house, your feet get hot and uncomfortable."

"Mother," asked Ruth, "if your Fairy Godmother offered you a pair of glass slippers, what kind would you ask for instead?"

"Well," said Mother, "if it were summer, I'd ask for a pair of soft, low-heeled sandals. They would give my feet lots of air and sunshine and comfort."

Father had been drawing and now he held up a sketch. "Now here," he said, "are the slippers that a Fairy Godmother offered to four of her godchildren.



This was chosen by a little Dutch girl. It's made of wood and will last forever."

"I wouldn't choose that," said Ruth. "It's just as stiff and uncomfortable as a glass slipper."

"And this," Father continued, "she gave to a little Chinese Cinderella. You see, this little girl's feet had been bandaged since she was about five years old, so she could only toddle, not run and jump and climb, as you can."

"Gracious!" exclaimed Paul. "I'm glad my feet are good and big."

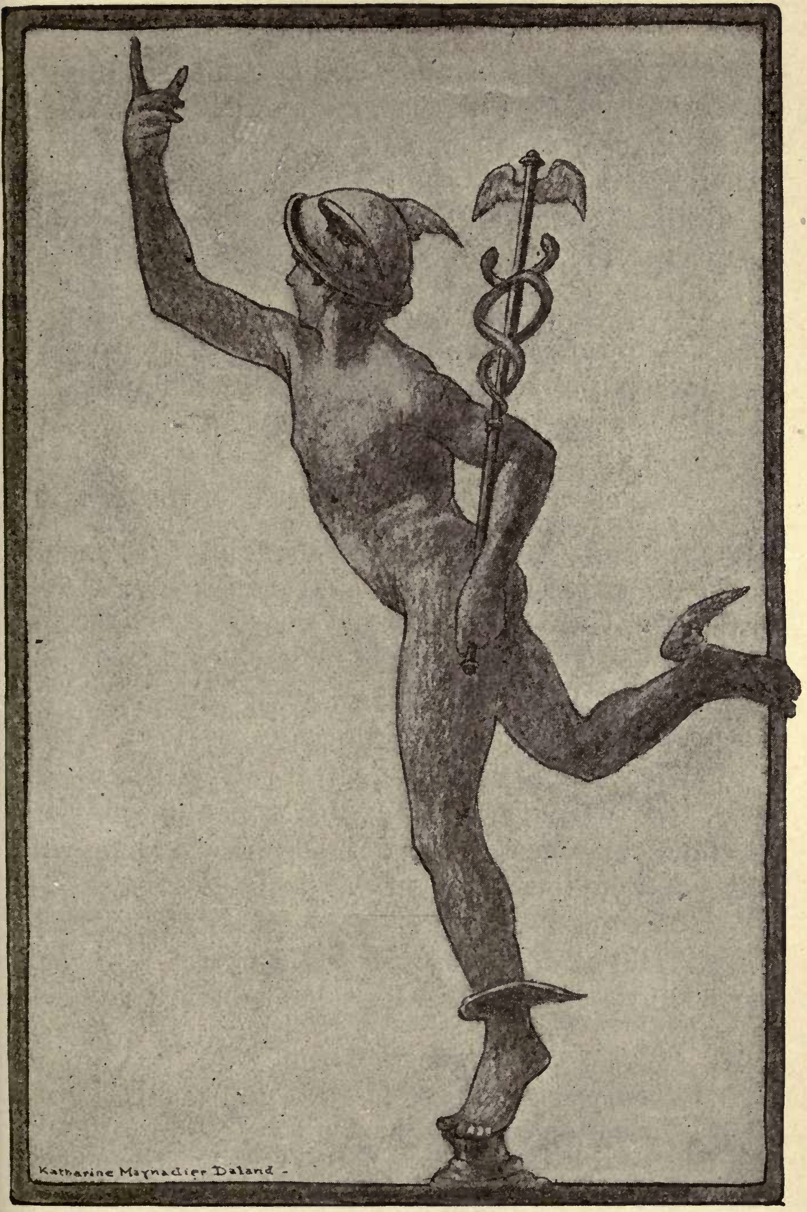
"And these," continued his Father, "she offered to a little American girl. See, this pair is of shiny patent-leather."

Ruth shook her head. "They are pretty, but in school the other day, Maud Smith cried because her patent-leather shoes hurt her feet. Besides, I couldn't walk half a minute in those high heels, and the pointed toes would squeeze my feet all into a lump."

"Well, then," said Mother, "I fancy the Fairy Godmother would let you choose this other pair. They are soft, tan leather, nicely lined, so there are no rough places to hurt your feet. The sole and toe are broad and the heels low, and there is a pretty rosette to trim it. In those, you could dance happily with the prince and run away at midnight with no fear of falling down the palace steps."

Paul's thoughts had gone back to "Shanks's Mare." "I think it's funny," he said, "to call your feet your 'horses.' What made you think of it, Daddy?"

"Why," Father answered, "I got it from an old Scotch nurse of mine. When I was a tiny little fellow, she took such good care of me. Every morning when I had my bath she washed and dried my feet so carefully. She cut the toe-nails straight across, not round at the corners, for that often makes them grow into the flesh and hurt. Every day she had clean stockings for me, and she took great care that my stockings and shoes should be plenty long enough. She taught me to stand squarely on my feet, not on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one side or the other, and she made me walk lightly on the balls of my feet, with my toes pointed straight ahead, like an Indian. Just before she tucked me into my crib at night she bathed my feet again, and as she dried each foot, she would sing to it in a pretty Scotch accent,

'Little white pony,
Warm soft and bonnie,
Dancing and prancing till weary of play,
Rest in your stable,
Then you'll be able
To run thro' the heather at break of the day.'

And ever since then, Paul, I've thought of my feet as two good, strong, white horses, and I try to take care of them, so they can work well for me."

"I know the sort of feet I'd love to have," said Ruth. "I'd like to have feet with wings, like the statue we saw in the Art Gallery."

"Well," laughed Father, "we can't all be Greek gods, like Mercury, and fly with wings on our feet, but that's no reason why we should hobble along with corns and bunions on them."

Mother had gathered up her sewing. "Come folks," she said, "put your white horses into their harness. We must gallop them home before supper."

THINGS TO DO

1. When you get ready to go to bed to-night, get a piece of colored paper and have a pencil handy. Before you take your bath, wet the soles of your feet, then stand on the paper with feet parallel. Step off and while the

impression of your feet is still on the paper, outline the wet prints. Notice the places where your foot did not wet the paper and find these places on your feet. Have you a well-arched foot? Are your toes nicely spread out, or are they bent together to a point?

2. Next time you are down town, go past a shoe-store. See how many different shapes you can find in children's, men's and women's shoes. Which shapes are most like the print of your foot? Which would be best for the feet?

3. Find pictures of foot coverings worn by people in different parts of the world. What stories about the lives of the people do these pictures tell?

THINGS TO REMEMBER

Our feet carry the weight of our bodies, because their bones and muscles are put together to form arches, like the span of a bridge. We can help our feet by practicing good standing and walking positions. These are, to stand squarely on our feet, to walk on the balls of the feet, to bend the foot with each step, and to point the toes ahead, not to "ten minutes to two."

We should choose shoes shaped to preserve these wonderful foot-arches. If we are growing boys and girls, our shoes should follow the shape of the foot, heels should be broad and low; shoes should be long enough to let the foot slip forward when we walk; toes should be wide enough so the toes inside may move naturally; soles should bend with every movement; inside linings should be smooth and free from rough places. The best materials are those that are tough, soft, nearly waterproof, but with tiny pores to let air in. What would these be?

Care for the feet by bathing them at night, to cleanse them of the perspiration and dead skin that collected during the day. Trim the toe-nails straight across. Put on clean dry stockings every morning. And remember, that while we are young our bones are soft. Bad positions, bad shoes, bad care will harm our feet much more than when we are older.

THINGS TO THINK ABOUT

1. Can you tell what makes a perfect foot? How does this kind of foot help carry the body?

2. Can you walk as an Indian boy would? Tell and show just how you would do it. Can you tell why this is a good way to walk?

3. What are six good things to look for in buying shoes?

4. Make out a program for taking good care of your feet. Follow it for one week and decide if it is a good thing to keep up.

5. Find out, if you can, what the soldiers are taught to do for their feet. Why must they do these things?

CHAPTER X

TAKING PICTURES

RUTH and Paul always loved to walk with their Father because he made up such interesting games. One favorite they called "free shopping." They played it on Main Street, where the shops were. They would walk quickly past a shop-window and then each told what, in the window, he had bought and what he was going to do with it. You had to be very quick indeed to see everything in the window and choose the nicest thing.

One day, when they were playing "free shopping," Ruth exclaimed, "Oh, I bought something lovely. I bought a camera. Now, I'm going to take a picture of Mother and give it to you, Daddy, for your birthday."

Father smiled. "Thank you, dear, but I have a whole album full of pictures of Mother."

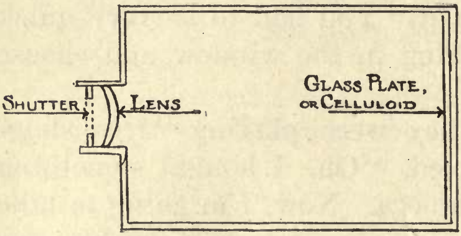
"Where are they, Daddy?" said Paul. "I never saw them."

"I keep them here in my brain-album," said Father, tapping his forehead, "and all I have to do, day or night, is just to close my eyes and I can see them as plain as can be."

"Why," said Ruth, shutting her eyes, "so can I. And it's so much prettier than a photograph, because her hair is brown and her eyes are blue and she smiles at me. I never really thought before that my eyes were taking pictures and putting them into an album inside my head. How do they do it, Daddy?”

“They do it just the way a camera does. No, I’m not joking, Ruth, your eyes really are cameras. Let’s sit down a moment here in the park and I’ll tell you. If you could see inside a camera, it is something like this.” Here Mr. Weston took a leaf from his notebook and sketched rapidly. “The camera is just a box lined with black, and with a specially fixed sheet of celluloid or glass here in the back, for the picture to fall on. And what is this in front, Ruth?”

“Why, that is the glass lens for the light to come through.”



“Yes, and here is the black cover, or shutter, that opens and leaves a little hole to let the light in when we take a picture and closes after the picture is taken.”

“But my eyes aren’t like that,” objected Paul.

“Oh, yes, they are. Feel gently just above and below your eye. What shape is it?”

“It feels like a ball.”

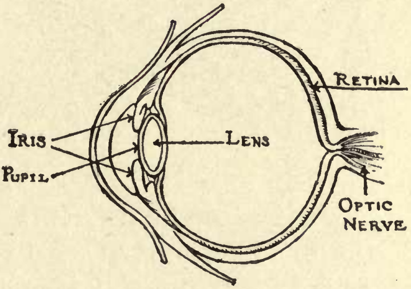
“Yes, your eye-camera is a ball-shaped box. Now, does the front of your eye have any little hole, like the camera, for the light to come through?”

Paul looked closely at Ruth’s eyes. “Yes,” he said, “in the middle of the brown part, there is a round, black hole. O, Daddy, I can see my picture in it!”

"To be sure," said Father. "The brown part, which is often blue or gray, or greenish, is like the camera-shutter. It opens wide and leaves a big hole, or closes almost shut, according to how bright the light is."

"Yes," said Ruth, "I've noticed that with my kitty. In the sun, the holes are just tiny slits, and in the dark, they are oh, so big and round."

"Now," continued Father, "perhaps you'd like to see how the inside of your eye looks. If it were cut in half, it would be something like this. You see, here in front is the colored curtain, or iris, with the little hole, or pupil, as we call it, for the light to come through. The light passes through the lens, just as it does in the camera, and falls on the black lining, or retina, at the back of the eyeball and makes a picture there."



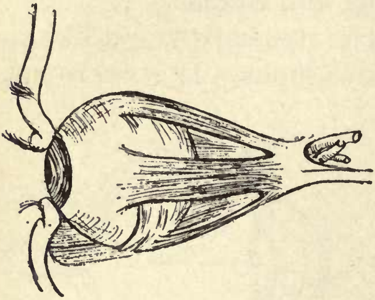
"But how do my eyes move?" asked Paul.

Father drew another sketch. "These are six muscles, like strips of elastic, to turn the eye from one side to the other, or roll it up or down."

"And how do the pictures from our eyes get into our brains and stay there?"

"That," said Father, "is where the eye is more wonderful than any other camera in the world. For years, wise men have been trying to find out how to telegraph pictures, but the pictures taken in our eye-cameras are all instantly telegraphed to our brains. Here, at the back, is the telegraph-wire, or nerve, that carries the message. It is printed on the brain and there it stays forever."

"I guess my eyes *are* pretty good cameras," said Ruth. "Without them I couldn't see you or Paul, and I wouldn't have any lovely pictures in my brain to look at in the dark after I'm in bed."



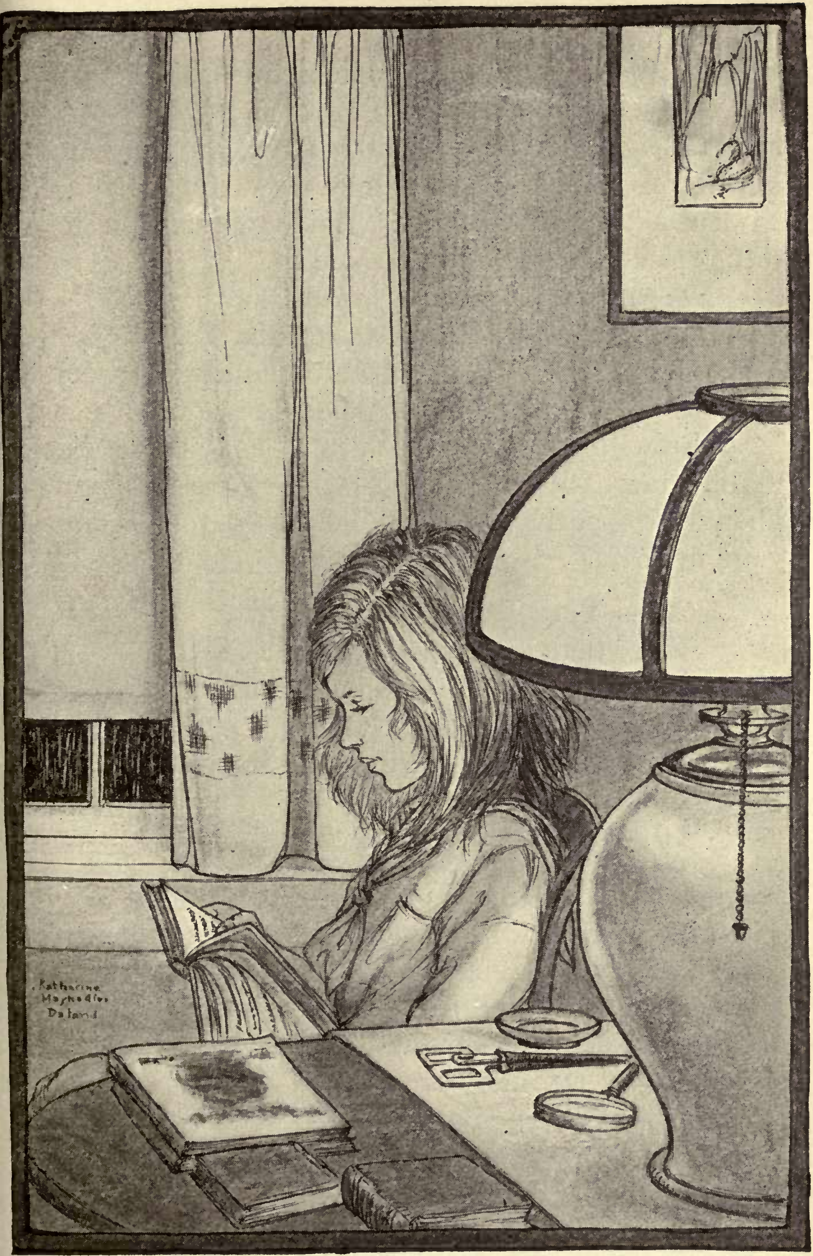
"No," said Paul, "you couldn't find your way around, or read, and you might get run over, or fall into the river."

"Yes," chimed in Ruth, "and when I grew up, I couldn't be an artist, as I want to. I'd just have to sit in the dark and fold my hands."

"People might help and teach you," said her Father, "but it is very hard and sad to be blind. And even weak eyes make our work and study hard and give us headaches, indigestion and lots of other troubles. You see, although our eyes are such valuable and wonderful cameras, most people seem to think they need take no care of them."

"But," said Ruth, "I get so interested reading that I forget all about lighting the lamp."

"I saw you last night," replied her Father. "You were doing five wrong things at once. *First,* you were reading in a bad light. *Second,* you were reading fine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print. *Third,* your nose almost touched the page. *Fourth,* you were facing the light, and *fifth,* you had read so long that your eyes were tired, yet you cruelly insisted on using the poor things."

Ruth hung her head. "Well, tell us five *right* things to do, Daddy," she begged.

"No, draw us a picture," said Paul.

So Mr. Weston drew this picture. "What is the little girl's name?" asked Paul, who always wanted to know the names of picture people.

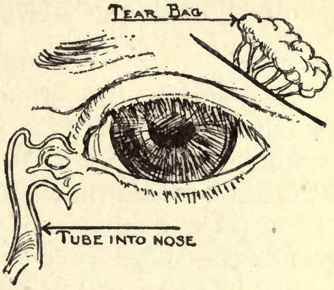
"We will call her Miss Vera Wise," said Father. "And now I'll write you some nonsense verses about her—perhaps they'll help you to remember your eyes."

"Miss Vera Wise prizes her eyes
More than some who are older.
You see her light, steady and bright,
Falls over her left shoulder.
No pale, fine print will make her squint;
She does not read all day.
If you, too, prize your precious eyes,
Follow Miss Vera's way."

"Miss Vera *is* wise," said Ruth. "She'll make me remember about having a good light, and sitting with my back to it, and with the book about a foot away, and not reading fine print. Is there anything else to remember, Daddy?"

"Just one principal thing—that is to keep the eyes clean. Never, never use a dirty towel, or wash-bowl in a public washroom, never rub your eyes with dirty fingers, or gloves, or a soiled handkerchief. Bathe them every morning, and if they are red or tired, or if things look blurred, go straight to the oculist. Your eyes may need medicine, or they may need glasses, and no one but the oculist can tell which."

"Yesterday, in school, Daddy, one of the boys got something in his eye, and the teacher pulled his upper lid over the under one and the eyelashes brushed the speck out."



"Yes," said Father, "sometimes that works. You see, children, the tears help. Above the outer side of each eye is the tear-bag. It works like this. The tears flow across the front of the eye and wash it and run off down this little hole into the nose. But if the tears and eyelashes don't get the speck out, and it keeps on hurting, it is best to go at once to the oculist. Eyes are too precious to fool with. And now," he added, rising, "let's run home and take some pictures of Mother and the supper-table."

THINGS TO DO

1. How many of you have played Ruth's "free-shopping" game? Try it. Try, also, to see as many things as you can, and to make a list of them afterwards. How sharp are your eyes?

2. Get a mirror. Notice the parts of your eye that the story describes. Find the little black hole or pupil,

the curtain or iris. Notice how the iris and pupil change in size as you look from darkness into light. Perhaps, if you bring your kodak to school, your teacher will help you to find out how it resembles your eye.

3. Feel gently around your eye, and discover the facts about it that your story describes.

4. Watch dogs, cats, fish in the aquarium. How are their eyes like yours? Different from yours?

5. To-night, try sitting on different sides of the reading lamp or electric light. Which side gives the best light for reading and writing? Why?

THINGS TO REMEMBER

The eye is the camera which takes for us pictures of the world around us. It is something like our kodaks, but much more wonderful. It is a hollow, dark-lined ball. The light enters through a tiny hole, the pupil. Around the pupil is a curtain of muscle called the iris. The iris makes the pupil very large, if there is little light, and small, if there is too much light for the sensitive eye. Across the little hole stretches the lens. The light must pass through this before it can enter the eye. The lens helps to make the eye-picture clear. The picture which the light brings then falls upon a very sensitive lining spread inside, over the back of the eye-ball camera. This wonderful film is the retina. On it the picture is taken. From the retina runs a nerve called the optic nerve. This telegraphs the picture taken on the retina to the brain. In the brain the picture is developed so that we recognize it. It seems to be printed, somehow, on the brain, because it stays there as long as we live and we can see it again whenever we wish to "remember" it.

To care for such wonderful cameras we should follow these rules:

Read only in a good light. Read large print. Let the light come over the left shoulder. Sit well upright, and let your book be from 12 to 18 inches from your eyes. Stop reading or writing as soon as your eyes get tired or uncomfortable. Never rub your eyes. Never use soiled public towels or public wash-bowls for bathing eyes or washing your face. Have your own wash-cloth and towel and use the water as it runs from the faucet. Don't keep on trying to remove particles from your eyes. If you fail at first, get a nurse or doctor to help you. Bathe eyes every morning with clean water. If eyes hurt, if things are blurred, if you have headaches after reading, you may need glasses. Go to the oculist. He can tell exactly what will help you.

THINGS TO THINK ABOUT

1. Can you tell how your kodak takes a picture? Can you tell what the parts of your eye are for in making brain pictures for you?

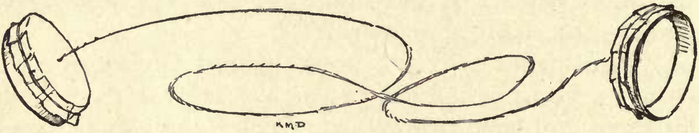
2 What rules will you make for yourself about using your eyes for reading or working?

3. What rules will you make about caring for your eyes when you are not using them? How many of these rules have you been following? Which ones must you try harder to follow?

CHAPTER XI

Two Telephones

It was a dark, rainy Saturday afternoon. Paul stood sadly at the window saying, "Rain, rain, go away! Come again another day!" but the rain still beat against the window and the wind whistled through the trees. Suddenly he saw Father coming up the walk. Rushing out, he seized his hand. "O, Daddy," he cried, "do play with me! Ruth's reading and my drum is broken, and when I went in where Mother and Aunt Louise are talking, Aunt Louise said, 'Little pitchers have big ears.' "



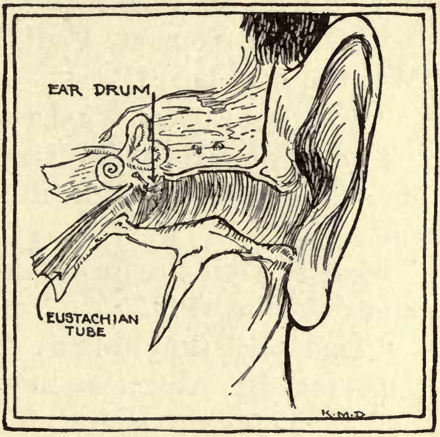
"Well, well," said Father, laughing, "that's hard luck. Now, let's see? What shall we do? I'll tell you—we'll make a play telephone."

While Paul watched, his father took from a desk drawer a stiff card mailing-tube. With his knife he cut off a ring from each end. Then he cut two circles of parchment from the broken head of Paul's drum and tied a circle over one end of each ring. Last of all, he pricked holes in the centers of the pieces of parchment and connected the two by a long string with a knot at each end. When it was done, it looked like this.

Paul put one end to his ear and Father spoke into the other end. They were having a fine time telephoning to each other when Ruth came in. "Oh, what a splendid telephone!" she cried. "Do make me one, Daddy!"

"I'm sure Paul will share his with you," said Father. "Besides, Ruth, you already have a wonderful telephone inside your own head." Paul looked puzzled, but Ruth exclaimed, "Tell us all about it! What do you mean?"

Father pinched Ruth's little ear. "Here," he said, "is the outside of a marvelous telephone. It catches the sounds just as the cardboard ring of our play telephone does. Perhaps you'd like to see just how your telephone is made." He sketched for a moment, then continued, "Here is what you usually call your ear, though it is really the least important part of the whole ear. It leads into this tube, where, as you know, there is ear-wax."



"What's ear-wax for?" asked Paul.

"It is to keep insects and dirt out of your telephone. When you wash, don't try to dig way in and get out all the wax, for it is very useful. At the end of the tube is a drum-head stretched across, just like our play telephone."

"Is there a string fast to it?" inquired Paul.

"No," said Father. "Instead there are three tiny bones. Still deeper in, there are winding tubes. The nerve is like our string. It runs from the tubes to the brain, where we hear and understand."

Paul puckered his forehead. "But, Daddy," he said, "I don't see what *makes* sound."

"Listen a moment, Paul," his father answered. "What do you hear?"

"Why, I hear the wind roaring outside."

Father picked up the remains of the cardboard tube and blew through it. "And what do you hear now?"

"I hear your breath coming out of the tube. It sounds like the wind."

"That's it," said Father. "Every sound is caused by moving air. Air moves in waves just as water does Look at the picture again. Your outside ear catches the air-waves and they go through the tube to the ear-drum. As they hit the drum it shakes and sets the tiny bones quivering. These make the tubes quiver and then the nerve attached to the tubes carries the message to the brain and we hear."

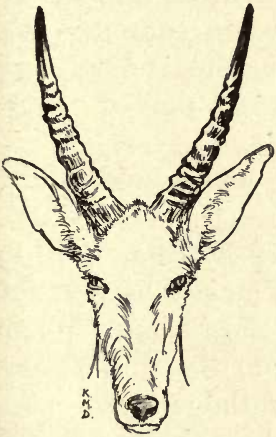
"Why is it, Daddy," said Ruth, "that different sorts of animals have such different kinds of ears?"

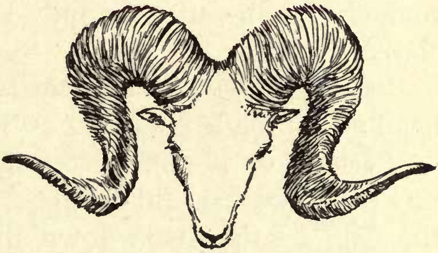
"Because, Ruthie, Mother Nature gives each of her children just what he needs. Now here are two photographs that my friend, Mr. Willis, brought back from Africa. This is a reed-buck. He lives among the reeds on the banks of the African rivers."

"My, what long ears!" cried Paul.

"Yes," said Father, "the reeds prevent his seeing his enemies, so he has to depend on his ears to save him. They are long, so as to catch every sound-wave."

"And what's this other animal?" asked Ruth. "It looks like a sheep."





"It is," replied her Father. "It's a wild sheep that lives in Central Africa. See how small its ears are. That is because it lives on the plains where no enemy can creep up and surprise it. It can see and smell anyone coming a long way off and has no need of specially sharp ears."

"Daddy, what makes people deaf?" asked Ruth.

"Many things. In the first place, things sometimes get into the tube and stop it up. When I was about Paul's age, I saw a Chinese magician put a silver dollar into his ear, say 'Hokus-pokus' and pull it out of his mouth. As soon as I got home I tried to show my little sister how he did it. As I had no dollar, I put a bean in my ear, but when I said 'Hokus-pokus,' the bean didn't budge."

"And then what happened?" asked Paul.

"Why, then I tried to take the bean out, but it wouldn't come. I ran crying to my Mother and she took me to the doctor. Remember, children, never to try to dig out anything that is fast in your ear—let the doctor do it. He took a long instrument and picked the bean out—but I never played magician again."

"Last winter," said Ruth, "I had a cold in my head and it made me deaf. Why was that?"

"Deafness is more often caused by colds than in any other way," said Father. "You see, here inside the ear, a tube leads down into the throat. When you have a cold, the soreness from the throat goes up this tube and all the inside of the ear gets sore. Sometimes an abscess forms and breaks through the ear-drum. People who are continually having colds almost always end by losing their hearing."

"Jennie Allen had to sit up front, last year, because she couldn't hear what the teacher said," said Ruth, "but this year she had her adenoids taken out and now she can hear everything."

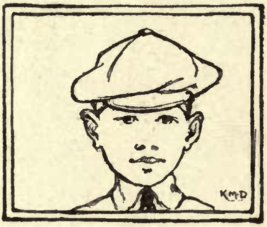
"Yes," said Father, "adenoids or too large tonsils or anything wrong with the throat will make us more or less deaf."

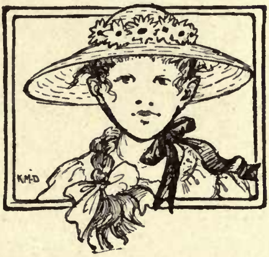
"I know something else, too," put in Paul. "Yesterday Sam Smith came up back of Tom Fuller and yelled in his ear to see him jump. Teacher scolded Sam. She said he might have made Tom deaf."

"So he might have," Father agreed. "Don't ever scream or blow into anyone's ears, or ever box or pull the ears—you may break the drum."

"Tom has ears that make you want to pull them, though," said Paul. "They stick straight out, just like sugar-bowl handles."

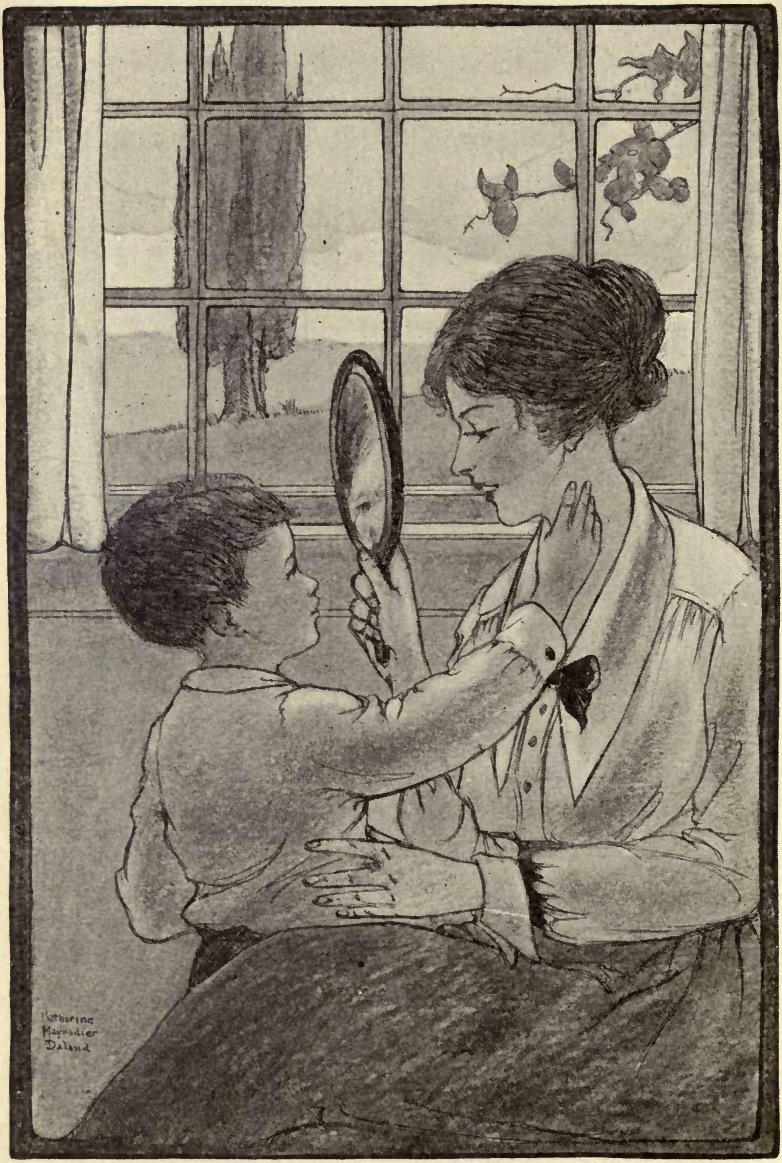
"Perhaps Tom was born that way," replied Father, "but children often put their ears out of shape. Hand me that photograph-album, please, Ruth. Now here are a boy and girl that I used to know. What makes their ears stick out so?"





"Why," said Ruth, "his cap is dragged down until his ears just have to stick out, and her hat-ribbons are tied behind her ears so it makes them bend way forward. Do you know, when baby lies on his side Aunt Louise always looks to see if his ears are flat. She says she doesn't want a boy with ears like sails."

"I saw two deaf and dumb people on the car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once," said Paul. "They were making signs with their hands and laughing."

"Yes, and many deaf children are taught to talk," said Father. "Miss Lyon, who teaches in the school for deaf mutes, gave me this picture of herself and one of her little pupils. He watches her lips to see how she forms the words and then looks in the mirror to see whether he is placing his lips the same way."

"Why does he put his hand on her throat?" asked Paul.

"To feel just how it moves when she speaks. But I am afraid the poor little boy will never speak just as other people do, for most deaf people always have a queer sort of voice. I suppose it is because they can't hear themselves."

"Let's try our ears and see how sharp they are, Daddy," suggested Ruth. So she and Paul stood up and Father held his watch away across the room to the left of them. He slowly walked nearer and nearer. At last Paul cried, "Now I can hear it!" and a moment later Ruth said, "I hear it, too."

"Your left ears," said Father, "are pretty good. Paul can hear the watch 56 inches away and Ruth 52. If you had been unable to hear it 50 inches away, I should have had to take you to the doctor and have him examine your ears." Then he tried their right ears in the same way and pronounced them all right.

"Rover can hear lots further than I can," said Paul. "Yesterday, Mother called me and I never heard her at all, but Rover did, and pricked up his ears and ran home."

"Maybe," said Father, "that was because you were busy playing and didn't listen very hard. You know blind people have very sharp ears, but it's only because they listen to every sound. Most of us don't half use our ears."

"Well, I don't want to be blind so as to learn to use my ears," said Ruth. "I'm going to begin right now to practise listening."

Just then the sun came out and a robin on the lawn broke into a gay, "Cheer-up! Cheer-up!" "Good for you, Ruthie!" said Father "Use your telephone well and you'll be surprised how many pleasant sounds it will bring to you. Let's go out on the porch and hear what Mr. Robin is singing about."

THINGS TO DO

Make a toy telephone like Paul's. If you have not a paper mailing tube and parchment, you can still make a telephone out of two baking powder cans in the same way. Hold the cans far enough apart, so the strings or wires are very tight. Try talking into the telephone. How far off can you hear with it? What questions does this game make you want to ask about your toy?

Test your own hearing. Put a watch on the table, then get a tape measure and measure off 50 inches to the right and to the left of the table. Stand, first, 50 inches to the left of the watch. Then move back a little at a time. Stop when you can't hear the watch. Then move towards it till you just *can* hear it. How far are you from the 50-inch line? Then how far can you hear the ticking? Try the same thing with the other ear Who has the sharpest ears in your room? Perhaps the teacher will test all the children's hearing and reseat them. How could she do this?

Compare your hearing with that of your pet cat, dog, rabbit. With that of a horse. How could you do it? Which do you find hears best? Is there any reason for this?

THINGS TO REMEMBER

Let us try to remember these important things about our ears, which will help us to care for them.

The outer ear is a sort of sound collector, which gathers noises of all kinds into a short passage. In this passage is ear-wax, put there by nature, to catch all sorts of injurious little particles. We should, of course, not put anything into this passage, nor try to remove the wax. This little passage has at its end a tightly stretched skin, the ear-drum.

Behind the drum is a tiny cavity, which has a passage leading down to the throat. Then there are three very small bones, that form a bridge across this little cavity. If you will look at the picture you will see how they connect the ear-drum with the inside part of the ear. This inside part is so important, and so delicate, that it is protected by heavy bone. A nerve runs from this inside part to the brain. This nerve carries messages from the ear to the brain.

Sounds are made by air in motion. Air moves in waves, as water does. You may have noticed how a loud noise can make windows rattle. In the same way, waves of air enter the ear-passage and shake the drum. The drum shakes the three tiny bones. These in turn, carry the motion to the nerve we learned about. This nerve carries the message made by the sound-waves to the brain and then we say we hear. All of this helps us to know how necessary it is to take good care of our ears.

We can protect our hearing by doing these things.

Never put anything into the ear-passages. Doctors or nurses will do that, if necessary.

Avoid colds and sore throats. Sore throats often cause the little passage between ear and throat to get stopped up, or diseased; this may lead to deafness.

Protect your ears from sudden loud noises. Never make loud noises by other people's ears.

If we have adenoids, be willing to have them removed. Adenoids sometimes stop up the passage to the ear, and cause deafness.

THINGS TO THINK ABOUT

What pleasures would you miss if you were deaf? Is hearing worth taking care of?

Did you decide what parts of the toy telephone helped you to hear at a distance? What parts of your ear help you to hear?

What causes the sounds that reach your ears?

What can we do to keep our hearing in perfect condition?

How can we tell if our hearing is as good as it should be? What ought we do if it is not?

CHAPTER XII

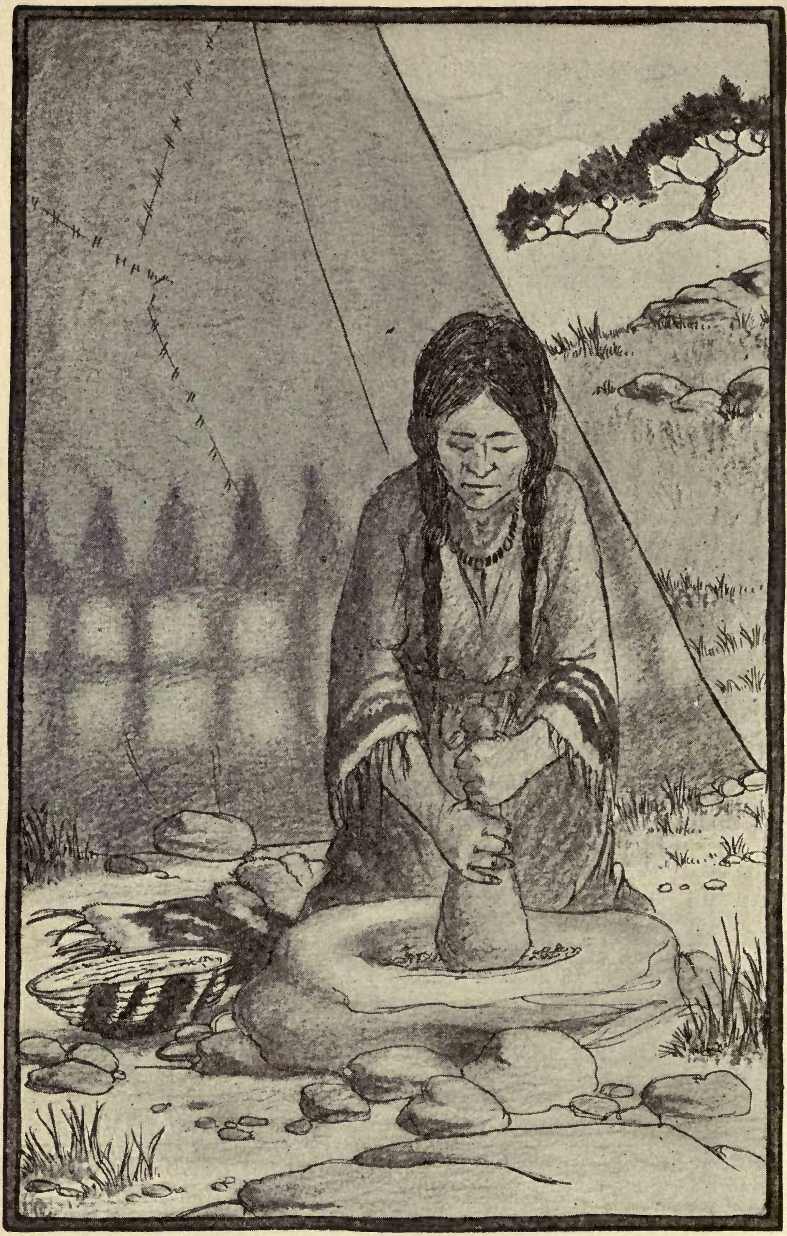
TABLEWARE

RUTH'S Father had a way of always knowing what little girls like, and when, on her tenth birthday, she found on the breakfast-table a little silver knife and fork, all for her very own, she was delighted. She wanted to wash them herself, put them carefully into their box, and begged her Mother to buy her some silver-polish. Father, smiling at her enthusiasm, said, "I'm glad, little girl, that you mean to take such good care of my present, but why don't you take care of the rest of your tableware?"

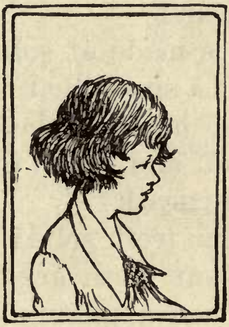
"Why, what do you mean, Daddy?" exclaimed eight-year-old Paul. "Ruth hasn't any other tableware."

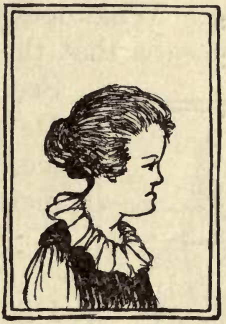
"Oh yes, she has, a good many pieces, and more coming, too. You'll have thirty-two before you finish, Ruth, if you don't let them get all cracked and dirty and useless. If you lose your birthday present you may be able to get some more of the same pattern, but if you lose this other set, you'll never have another like it."

Her father laughed at Ruth's puzzled face, and leading her to the glass, gently opened her mouth, while Paul looked on with deep interest. "There, children," he said, "is a wonderful set of tools. Have you ever seen Mother chopping meat in a bowl, or



crushing bread-crumbs with the rolling-pin? Well, that is the sort of work the teeth do. Run your finger along the edges and feel how sharp the six front ones are. They are for biting and crushing the food. The back ones, you see, are broader and duller. They do the crushing and grinding. Bring me your history book, Ruth. See, here is a picture of an Indian squaw grinding corn. Do you see how closely the millstones fit together. If they did not, the corn would not be ground fine. Just so the upper and lower teeth are made to fit each other. If they are crooked, or if the upper teeth do not fit *over* the lower ones, as they ought, the cutting and grinding will not be properly done. Here is a picture that Dr. Clarke gave me yesterday. It shows how ugly an overlapping jaw makes the face look. This pretty little girl's looks were spoiled because her teeth were not straightened and attended to in time. Then, too, bad teeth mean bad digestion. It takes the squaw a long time to grind the corn. In the same way, if our teeth do not cut and





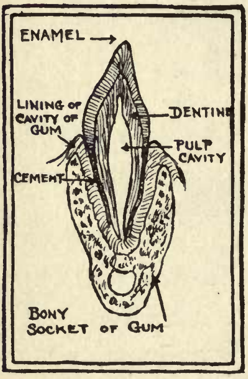
grind our food until it is fine, we cannot digest it easily."

"But, Daddy," objected Ruth, "the hens never chew the corn. They just gobble it down whole."

"So they do; but the hen has a nice little grinding-mill made of stones in her gizzard. If you had teeth in your stomach, you could swallow your breakfast whole, too."

While his father had been talking, Paul had been examining Ruth's new fork. "See, Daddy, it says 'Sterling.' What does that mean?"

"It means that the fork is made of solid silver. See, here is a spoon that is plated. Do you see how, on the back, it has worn off and shows the cheap metal underneath?"



"Are our teeth solid?"

"No, your teeth are 'plated.' I'll draw you a picture of what your tooth would look like if it were cut in two. Away inside is a soft pulp with a nerve lying in it. Outside that is some harder, tougher material called 'dentine,' and the whole exposed surface is covered with hard, shiny, white enamel. The enamel is so hard that it won't wear off, like the silver, from being used—in fact, chewing on crusts and hard food is good exercise for teeth—but it chips easily. That's why you should not crack nuts or bite wire or nails with the teeth.

"Now, if food is left between the teeth, it decays and forms an acid which eats through the enamel and makes a hole. The hole goes deeper and deeper through the dentine until it gets near the nerve, and then someone has an awful toothache."

"Yes," said Ruth, "I remember I had a hole in my tooth once and it hurt dreadfully to bite on it."

"Of course it did," her Father replied. "That is why poor teeth lead to indigestion. The food doesn't get properly chewed."

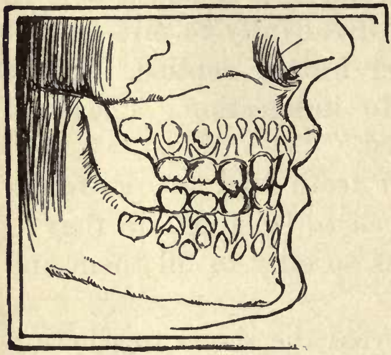
"But, Daddy, the first teeth that are going to drop out anyhow don't need to be filled, do they?" protested Paul. "It seems so silly to fill them and then pull them out."

Mr. Weston pointed across the street to where a house was being built. All around it was a scaffolding. "Do you think it silly, Paul, to build all that scaffolding and then, when the house is done, pull it down?"

"Of course not, Daddy. They have to have it to build the house."

"Well, it's just so with the first teeth; they are like a scaffolding to protect and prepare for the other teeth. When the house is completed, the scaffolding is torn down. So, when the second teeth are all finished and ready for use, the first ones drop out. The second ones come pushing up under the first ones, something like this."

Ruth and Paul watched while their Father rapidly sketched this picture of the teeth. "There," he said, "if you could look right through your gums, you could see your second teeth lying in the gums, under the roots of the 'baby' teeth. Don't you see, that if the baby tooth is all decayed, the poison from it will make the gums unhealthy, and as soon as the second teeth come in, they will be liable to decay, too?"



The children nodded assent.

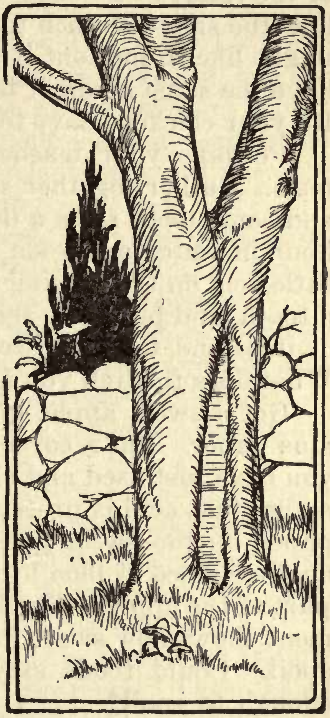
"Do you remember," their Father continued, "the old willow-tree with the big hole in it? Yesterday I saw a 'tree-dentist.' He is going to clean out the hole, fill it with cement, and he says that the old tree will be good for another fifty years. It's the same way with teeth—to save them, they must be filled before it is too late."

"I remember the tree," said Ruth. "Paul wanted to play Indian in the hole one day, but I wouldn't because the decayed stuff smelled so queer."

"Yes, our noses are safe guides when they tell us to beware. A queer, disagreeable smell always means 'Take care.' Decayed stuff smells bad because it is poisonous. The poison from a decayed tooth goes all through the blood and may cause sores, inflammation, and all kinds of trouble all over the body. The doctors think now that rheumatism and many other diseases are caused or made worse by decayed teeth."

"But I hate to go to the dentist," sighed Paul.

"Well, then," said his Father, "keep your tools clean. Brush them the first thing every morning, after every meal, and the last thing at night. After eating, see that no food is left between the teeth, and if it is, take it out with dental floss or a small elastic band. Polish your teeth with tooth-powder. You are taken to the dentist twice a year, so that he can examine the teeth and make sure that they are all right. And don't neglect your toothbrush. Always rinse it in clean water and sprinkle a little salt on it when you put it away. Decay is another way of spelling dirt."



"Yes," said Ruth, "I guess we'd be pretty disgusted if the knives at dinner were all greasy and sticky from breakfast, wouldn't we?"

"And yet," Father replied, "I'd rather put a dirty fork into my mouth three times a day than to have thirty-two dirty teeth in it all the time."

On her next birthday, Father gave Ruth a spoon to match her knife and fork, and he complimented her on the care she gave to *all* her tableware.

THINGS TO DO

Get a mirror and find out how many different kinds of teeth you have? How many of each have you?

Get a piece of bread and a piece of hard candy. Which teeth do you use to bite the bread? To crack off a piece of the candy? To chew what you have bitten? Find out how the shape of each tooth helps it to do its work. You might like to find out if your cat or dog, pony or rabbit, have the same kinds of teeth and use them the same way. Do your chickens have teeth? Do they need them?

Perhaps your teacher will help you to make these tests. Gather together some hydrochloric acid, a saucer, and some teeth from a dentist. Boil the teeth for a half hour in water and soda before using them. Now put a little acid on the shining enamel of the tooth. Crack open a tooth, and put some acid on the cracked part. Find the dentine and the pulp cavity. What has the acid done? What does this tell you about the use of enamel?

Get a sweet apple, a rotten apple, and some blue litmus paper. Put a corner of the blue paper into the acid you have just used and observe the color. This is always a sign that acid is present. Now put a fresh piece of blue paper on the sweet pulp of the good apple. Next put another piece of blue litmus paper on the scraped rotten part of the apple. Which shows most acid? This experiment shows how sweet foods may become acid when they spoil. Could foods stay any place in the mouth long enough to spoil?

If your teacher can get enough of the blue litmus paper, she will give you a piece to take home. If so, rub it on your teeth before you brush them in the morning. What does the experiment show? Why don't we want acid, or germs that cause acid, in the mouth?

Form a tooth-brush club in your room. Have two teams and run a race to see which can have the most members scrubbing night and morning for a week. Learn the correct way to scrub. Keep a score on the board. See which team can get the best monthly average.

THINGS TO REMEMBER

We have teeth for biting and teeth for chewing, suited by their shape and location for their work of getting food into fine particles before we swallow it. To do this work well, the upper and lower teeth must fit perfectly, one set over the other, like two millstones, or the halves of a pair of scissors. If the teeth do not fit so, they should be straightened by the dentist. Crooked teeth are not only ugly, but they prevent good chewing.

Teeth are covered with smooth, shining, protecting enamel. The softer dentine is inside. Within the center of the tooth is a cavity containing some little blood-vessels and a nerve, to feed and keep the tooth alive. As long as the enamel is uncracked, the inside of the tooth is safe from decay. As soon as any holes come in the outside of the tooth, they should be filled. Even the baby-teeth should be filled.

The baby-teeth are like guide-posts to show the permanent teeth where to come in. If these baby-teeth are not taken care of the permanent teeth will come in crooked or out of place. They may even become decayed from contact with the cavities left by the bad baby-teeth.

Particles of food will form acids in the mouth if they are allowed to stick in between the teeth. These acids will attack the teeth, making holes in the dentine and exposing the nerve. This means decayed teeth, toothache, sickness. Follow these rules to have sound teeth all your life.

1. Never bite very hard things. You may crack the enamel.

2. Eat vegetables, fruits, and the crusty parts of

bread, and chew well. Drink plenty of milk. These foods give the materials for building strong, white teeth.

3. Clean your teeth at least twice a day. Never forget to clean them before bed and before breakfast. Use dental floss to get particles from between the teeth.

4. Learn to brush with a rotary motion. Your teacher or dentist will show you how.

5. Keep the toothbrush clean by rinsing after each using, and rubbing salt in it several times a week. Never use another's brush, or lend yours.

6. Go to a dentist at least two times a year. He will prevent the big cavities, and save you many aches.

7. Remember that a clean tooth never decays.

THINGS TO THINK ABOUT

What reasons are there for having our teeth straightened when they are crooked?

What reasons are there for not using our teeth as tools?

What good is the nerve in the tooth? When does it hurt us?

Why are dentists always telling us to care for the baby-teeth?

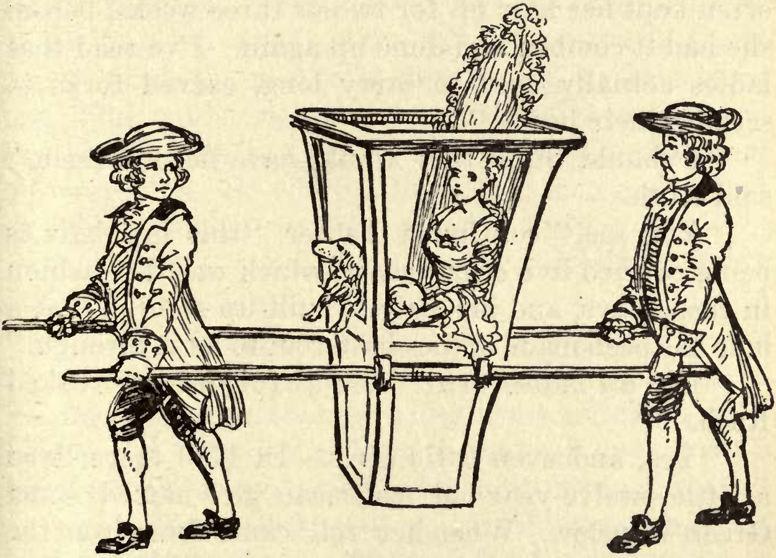
What rules can we follow to keep our teeth in perfect condition?

CHAPTER XIII

CARE OF THE HAIR

"WELL, well," said Mr. Weston, looking over Paul's shoulder, "where did you find that old French book?"

"In the garret," answered Paul, "and the pictures are so queer. What on earth has this lady got on her head?"



"That," laughed Mr. Weston, "is what elegant hairdressers, more than a hundred years ago, used to call a 'Macaroni Roll!' You remember that Yankee Doodle 'stuck a feather in his cap and called it "macaroni" '? Well, people used to use the word 'macaroni' to mean fashionable or dandified, and so this stylish hairdress got its name."

"How did they fix it that way?" asked Ruth, who had just come in from school and was hanging over Paul's shoulder.

"Why," said her Father, "they took a great wad of tow or horse-hair and brushed the lady's hair up over it. Then they greased it, covered it with white powder and trimmed it with ribbons, feathers and false curls. All this took a long time, so a lady often kept her hair up for two or three weeks, before she had it combed and done up again. I've read that ladies actually used to carry long, carved forks to scratch their heads."

"I should think they would have needed them," said Ruth.

"You see," continued Father, "this fine lady is being carried in a sedan-chair, which was the fashion in those days, and her hair is built up so high that a hole has been made in the chair-roof to let it through."

"Did all ladies wear those awful things?" asked Ruth.

"Yes, and even little girls. In 1770 there lived a little twelve-year-old American girl named Anna Green Winslow. When her 'roll' came home from the hairdresser, she wrote to her mother, 'Aunt Storer said it ought to be made less, Aunt Deming said it ought not to be made at all. It makes my head itch and ache and burn like anything, Mama. When it first came home, Aunt put it on and my new cap upon it. She took her apron and measured me, and from the roots of my hair on my forehead to the top of my notions, I measured above an inch longer than I did from the roots of my hair to the end of my chin.' "

"I should think it *would* have made her head itch and ache," said Ruth.

"Why did she wear it, then?" said Paul. "Boys aren't so silly. Men never wore false hair, did they?"

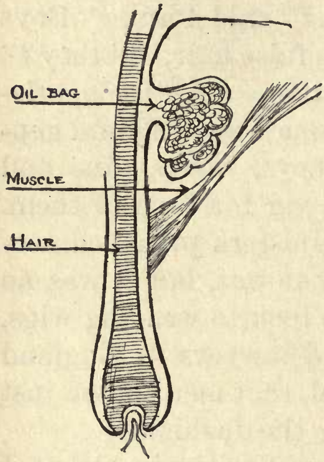
"Indeed they did," said Father. "All the gentlemen used to wear wigs. Why, one New England gentleman, who had three little boys, seven, nine and eleven years old, bought a $45 wig for each of them. It got to be so bad that the ministers preached sermons telling the men how silly it was, but it was no use. The ministers themselves took to wearing wigs, and to this day, the judges and lawyers in England all wear wigs. So you see, Paul, that men can be just as silly as women in following the fashion."

"I'm glad," said Paul, very positively, "that I didn't live in such silly times."

"Well," remarked Ruth, "some folks are pretty foolish nowadays. Dorothy Frost hates straight hair. So she uses her mother's curling-irons and frizzes her hair all up. But it's making the hair all dry, and it's breaking off, so pretty soon she won't have any left."

Paul had pulled one of his shining, chestnut hairs. "Look, Daddy," he cried, "it came out root and all."

"No," said Mr. Weston, "that swollen part at the end of the hair isn't really the root, or no new hair could grow in where this one was pulled out. The hair has no real root. It grows like this. Deep in the skin of the head are a lot of tiny knobs—about a thousand on every square inch. From each of these knobs grows a hair. The end of the hair is cup-shaped, so as to fit over the little knob. Each hair has a little bag of oil to keep it smooth and shiny and a muscle to move it."



"Oh, yes," cried Ruth, "when Pussy is angry with Rover, the hairs on her back and tail stand straight out."

"Yes," said Father, "and when you are cold, you can often see the hairs stand up on your arms and legs—we call it 'goose-flesh.' "

"What makes hair different colors?" asked Paul.

"The color," his Father answered, "depends on the amount of dyestuff inside the hair itself. As we grow old, or sometimes if we are not well, the dyestuff grows less and our hair turns gray or white."

"Why is some hair curly and some not?" Ruth looked rather sadly at her own straight, "bobbed" hair as she spoke.

"The curliness," said Father, "is caused by each hair being somewhat flat. You have watched a carpenter planing wood, haven't you? And you know that the long, flat shavings twist up into curls?"

"Oh, yes," said Ruth, "I stuck some in my hair the other day and we played Goldilocks and the Three Bears, and I was Goldilocks."

"And," continued Father, "you know that long, *round* pieces of wood are just sticks and stay straight. That is the way with the hair—hairs that are round are straight, but the rather flatter hairs curl up just like shavings. That is why Mother's hair is all wavy ringlets, while the Chinaman who does up my collars has straight hair, and the colored cook at the Frosts' has kinky hair."

"Isn't it funny," mused Paul, "how people in different countries *grow* different!"

"In the fairy tales," said Ruth, "the princesses all have beautiful, long, curly hair, and it's usually golden. I never read a story in my life where the heroine had short, straight hair like mine. Don't you remember 'Rapunzel' in Grimm's Fairy Tales? She had wonderful golden hair, so long that when the Prince called, 'Rapunzel, Rapunzel, let down your hair!' she used to let it down from her tower window, and the Prince climbed up as if it were a ladder."

"Yes," chimed in Paul, "and there was 'The Fair One with the Golden Locks.'"

"And there was 'Caporushes,'" said Ruth. "She made herself a cap out of rushes, so people couldn't see her 'beautiful golden hair that was all set with milk-white pearls,' and would think she was just a kitchen maid."

"Women aren't the only ones who have long hair," said Paul. "Don't you remember last week in Sunday School, Ruth, Mr. Maxwell told us about Samson? His hair had never been cut—never in his life—until that wicked Delilah cut it all off and made him lose all his strength.''

''Yes,'' agreed Father, ''all the books since books were first made praise long, thick hair. The Apostle Paul, in one of his letters, wrote, 'If a woman have long hair it is a glory to her.' ''

''I think Portia's hair must have been lovely,'' said Ruth. ''We've been reading 'The Merchant of Venice' in Lamb's Tales, and Shakespeare says,

'her sunny locks
Hung on her temples like a golden fleece.'

All the noblemen came to Belmont to see her, just as the Argonauts went to Colchis to find the Golden Fleece. Well,'' with a sigh, ''I can't have curls, but I mean to have nice hair, anyway. Why does hair fall out, Daddy?''

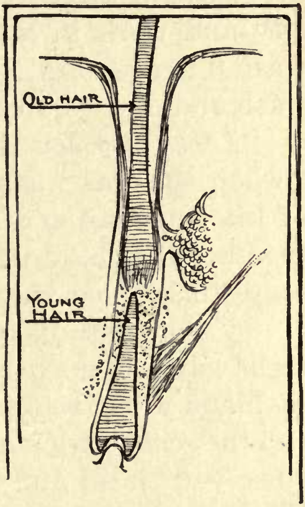
Father drew a sketch. ''Now here,'' he said, ''is the old hair being pushed out by a short new hair that is growing under it. New hairs push out the old ones just as the second teeth grow under the first ones and loosen them and at last push them out. But sometimes when hair falls out, it is because the hair isn't getting proper food.''

''Food?'' said Paul. ''I didn't know the hair had to eat.''

''Well, it doesn't eat as you do, with a set of teeth, but it eats as the grass and trees eat. Here in the picture are tiny tubes that carry the blood to the knob where the hair grows. The hair drinks up food from the blood just as plants do from the ground."

"But why do some people have such nice hair and other people have such stringy, ugly hair?" asked Paul.

"For the same reason that some plants are so much finer and taller than others," said Mother. "Last spring I planted my pansies in good soil where they would get plenty of food. I watered them, I picked all the stones and weeds out of the bed, and see how lovely the pansy-bed is now. Just so with the hair—it must be fed with plenty of good, red blood. If we want nice hair, we must keep our whole bodies healthy."



"Aunt Louise told me," said Ruth, "that when she had typhoid fever, all her hair fell out."

"Yes," said Father, "sickness prevents the hair from being rightly fed. Brushing the scalp makes the blood come to the skin and feed the hair. The hair needs a good brushing morning and night."

"My pansies," continued Mother, "would not have grown on the ash-heap and hair can't grow well in a scalp that is all covered with rubbish. You see, the skin peels off into flakes and dirt blows into the scalp and the oil from the little oil-bags mixes the dry skin and dirt into a mess that needs to be brushed off every day and washed away very often."

"How often?" asked Paul.

"That depends," said Mother, "on whether you live in the clean country and don't do dirty work and have thick hair that keeps the dirt off your scalp and whether your hair isn't very oily. If so, a washing every two or three weeks will do, but if you live in the city and work in a dirty factory you may have to wash it every week. If you are a boy, so that you can wash and dry it quickly, you can wash it every day."

"I was at Lucy Hackett's yesterday," said Ruth, "when she was washing her head. She took a bar of kitchen soap and rubbed it all over her hair and then held her head under the cold-water faucet. The soap stuck to her hair dreadfully."

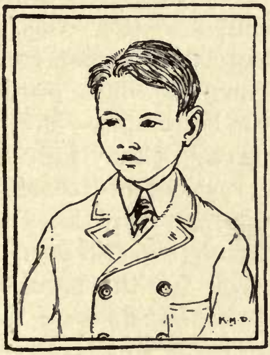
"I should think it would," said Mother. "The right way is to make a thick soapsuds with pure white soap and warm water. Dip the hair and scalp in and rub the scalp with your fingers or a clean brush, then rinse your head and hair with warm water until all the soap is out, pour a glass of cold water on your scalp to prevent your taking cold and rub the head perfectly dry with two or three towels."

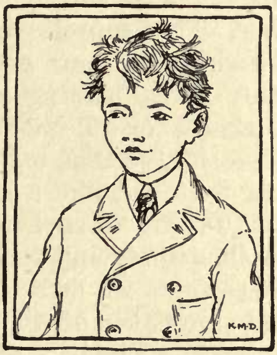
"I caught an awful cold last winter going out before my hair was dry," said Ruth.

"I remember that you did," said Father. "And another thing that you children should remember is never to put on anyone else's hat or use anyone else's brush and comb. A great many people have dandruff or even worse diseases of the head, and some careless, dirty people have tiny insects in their heads. I'm sure you don't want to get anything like that."

"Goodness, no!" exclaimed Ruth.

"Perhaps," said Father, after stepping into the next room, "you'd like to see some old pictures of me. When I was little, I just hated to brush my hair, so one day, when my hair was all tousled, my father took me to the photographer. I wanted to smooth my hair first, but Father wouldn't let me, and I was taken just as I was. Then Father brushed my hair nicely and the photographer took this other picture."





"Why, they look like two different boys," said Paul.

"For a whole year," laughed Father, "I had those pictures standing on my bureau, and I never once forgot to brush my hair."

"I think," said Mother, "it must be six o'clock. Suppose you children put all this talk into practice by going upstairs and brushing your hair before supper."

THINGS TO DO

If you have already formed a Health-Club, add this to your health-chores. With a clean stiff brush, give your hair and scalp 100 strokes, 50 to a side, before you go to bed. This is an old-fashioned recipe for beautiful hair. Try it for one month.

THINGS TO REMEMBER

Hair grows from a knob of little live cells, down deep in the skin. Connected with each hair are two little oil glands. These supply oil to keep the hair soft and shining. Tiny muscles are attached to the sides of the pit in which the hair grows. Coloring matter forms in the tiny hairs, making them brown or black or golden. But sickness, or other strain on the body, may rob the hair of this color, so that it becomes gray. Curly hair is hair that is flattened like a shaving, instead of round like a pencil. Trying to curl hair with a hot iron takes the oil out, makes it dry and stiff and causes it to fall out. From all these facts we learn how to care for the hair.

Old skin flakes off the scalp, just as it does off the rest of the body. The hair and scalp, being oily, collect dust. Therefore we must brush the hair and scalp thoroughly at least once a day, for cleanliness. Since the hair grows from live cells, these cells must be fed. By brushing the scalp hard and regularly we bring the blood to the surface, where it gives the cells the food they need to make new hair. No tonic put on the outside is as useful as regular rubbing to make hair grow.

We are not all blessed with beautiful hair, but we can make the most of what we have. First, we can keep it smooth and glossy and clean, by daily brushing with a clean brush. Second, we can wash it often enough for cleanliness. This will be perhaps once a week, perhaps once in three weeks, depending on how clean our surroundings are. We use hot water and thick soapsuds, for washing the hair. We never rub soap directly on our hair. After we have cleansed the hair in the lather, we rinse it several times, first with clear warm water, then with cold water, till all the soap is out. We dry the hair well with clean towels. We are careful not to go outdoors, in cool weather, until the hair is quite dry.

Finally, we *never* use the combs or brushes of other people, but always have our own.

THINGS TO THINK ABOUT

How does hair grow? What keeps it soft and shining?

Why can we improve our hair by rubbing? Why do all the hair-tonics give directions for rubbing these things into the scalp? How much good do "tonics" do?

Could keeping the health-rules have anything to do with beautiful hair?

How do you shampoo your hair? How often? Is yours the best way? How can you improve it? How do you care for your hair daily? What more could you do?

Some states have laws against public toilet articles. Why? Has your state? Do you think such laws are necessary?

How do you care for your comb and brush? How could you take better care of it?

CHAPTER XIV

SEEDS OF DISEASE

RUTH laid down Grimm's Fairy Tales with a sigh. "I wish there were really fairies," she said. "I'd love to see one."

"Yes," echoed Paul, "I'd like to see one so little that he could sit in Mother's thimble."

"Dear me," said Father, "a fairy as big as that would be a perfect giant. You mustn't expect fairies to be big enough for you to see. But if we were to set a trap, I think we might catch some fairies right in this room, and then perhaps Dr. Clarke would lend us his magic glass so we could look at them."

"O, Daddy," protested Ruth, "not real fairies here in this room!"

"Well," said Father, "I don't know what you call 'real' fairies, but there really are here in this room millions of little living things, only they are too small to be seen."

"Where are they?" demanded Paul.

Father fixed the shutters so that a single bar of sunlight fell across the floor. "Do you see those specks of dust dancing around in the sunlight?" he asked. "Each of those dust specks is carrying a load of germ goblins."

"What does 'germ' mean, Daddy?" Paul inquired.

"It means 'seed.' The germ goblins carry both good and bad seed. Some of their seeds help to make butter and cheese, to raise our bread, to make buttermilk and to turn cider into vinegar. Some of the seeds rot fruit, make the bread mouldy, decay our teeth, and give us mumps, whooping-cough, typhoid fever and other diseases."

"Oh, I'd love to set a trap and catch some germ goblins!" cried Paul. "How can we do it?"

"There are several ways," said Father, "but one of the easiest traps to make at home is a potato trap. Come out into the kitchen and let's make one."

In half an hour the trap was made. This is how Father did it. He took a potato, washed it and boiled it carefully so as not to break the skin. Then, after putting a knife into boiling water for a few moments, he used it to cut the potato in two. He laid each half of the potato, with the cut side up, on a saucer and poured in a little water.

"Why did you boil the knife?" asked Paul.

"So no germs would get from it onto the potato. We want to catch in our potato trap only the germs from the air."

"Now where shall we set the traps?" asked Ruth. "I think I'll set mine on the window-sill in Mother's room."

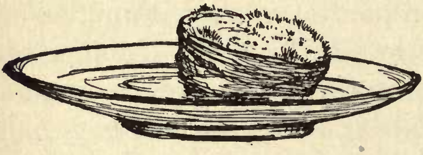
"It'll get knocked off. I'm going to put mine under her bed," said Paul.

When Mrs. Weston saw the procession entering her room and heard Paul's excited explanation that they were going to "catch germ fairies," she said, "Very well, you may leave the traps here, but nobody is to look at them for three days, not until Saturday."

Early Saturday morning both children rushed to look at their traps. Ruth ran to the window, but exclaimed, in dismay, "O, Daddy, I haven't caught anything at all! My potato just looks dried up and queer."

Meanwhile, Paul came wriggling out from under the bed. "Look!" he cried. "Look at the funny stuff growing on my potato trap!"

"Yes," said Father, " here is a real germ-garden. Paul's potato caught the invisible seeds from the air."

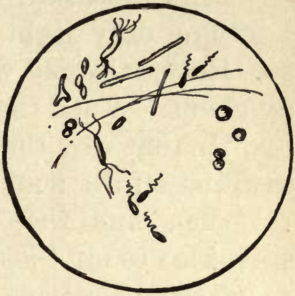


"But," said Ruth, "why didn't my trap catch any?"

"I suspect there were two reasons, Ruthie," said Mother. "In the first place, the window was closed, so it wasn't so dusty up on the sill as it was under the bed, and there weren't so many germs carried to your potato. In the second place, your trap stood in the bright sunshine all day, and germs just hate sunshine—it almost always kills them."

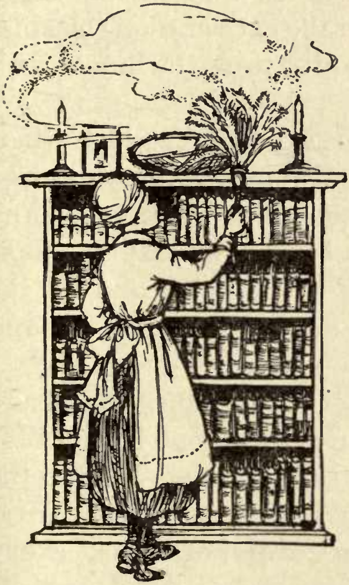
"You said we might see them through Dr. Clarke's magic glass, Daddy," said Paul.

"So you may, Paul. Dr. Clarke lent it to me yesterday," replied his Father. Leading the way downstairs, he went to his desk and there stood a fine microscope. "Here," he said, "is the glass through which we can look into fairyland." With a needle, he picked up a speck of the germ-garden and put it on a glass under the microscope. After a moment, he told the children to look. They saw a number of queer little things something like this.



"There," said Father, "are several different kinds of germs. You see that some are like marbles, some like pencils and others are like tiny corkscrews."

Ruth looked rather frightened "And do we have to breathe those things into our lungs all the time?" she asked.



"Most of them are perfectly harmless, Ruth," Father replied, "but of course we don't want to breathe any more dust than we can help. The other day, while I was waiting for Aunt Louise in her parlor, the maid, Carrie, was dusting like this."

Ruth and Paul both laughed at Father's sketch. "O, Daddy," cried Paul, "did she plant a *farm* of germs on your nose?"

"She did," declared his Father, "and when Aunt Louise came in, she said, 'Where on earth did you get that dreadful feather-duster?" and she took the duster and burned it up."

"And now, how will Carrie dust?" said Ruth.

"The only right way—with a damp cloth. You see, Ruth, it's only when they are dry that germs can fly about. When they are moist they 'stay put.' "

"Is that why the janitor at school sprinkles damp sawdust on the floor before he sweeps?" asked Paul.

"Yes, and that is why the streets need to be sprinkled to lay the dust and also washed every night, to wash the germs away."

"Daddy," said Ruth, "why do they put up signs saying people mustn't spit in the cars and on the sidewalk? Of course, it is impolite to do it, but it isn't dangerous, is it?"

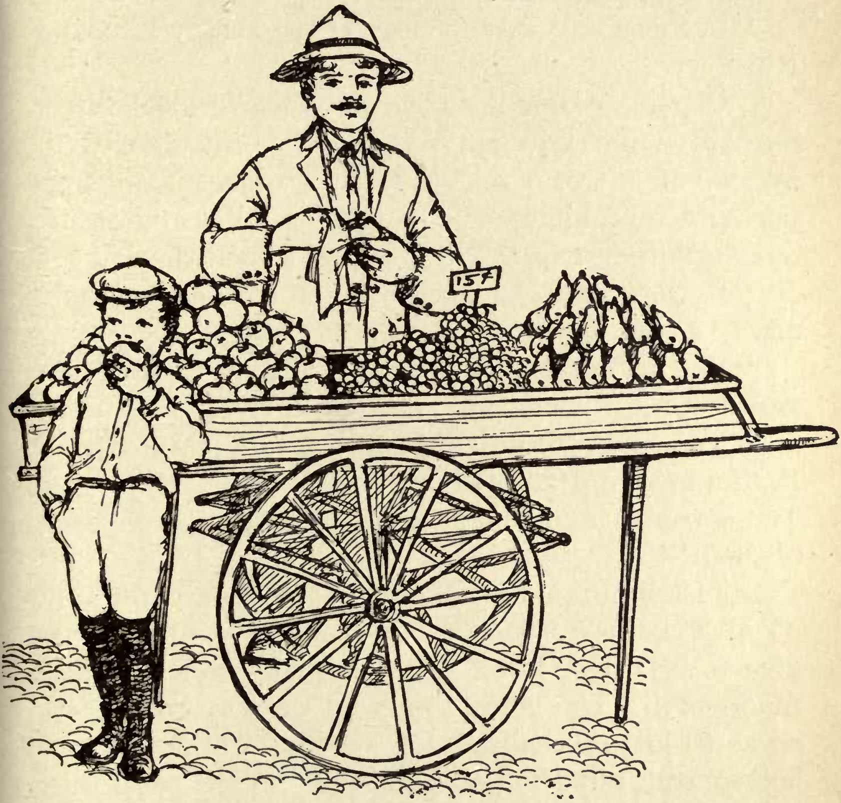
"Yes, indeed, it is very dangerous," said Father. "Why, Ruth, about seventy different kinds of germs have been found in people's mouths. Then, too, many people have colds, or tuberculosis, even. If they spit in the street, pretty soon it will dry up and all the disease germs will be free to float away on the air and be breathed into someone else's lungs."

"I never thought of that," said Ruth. "Are there many kinds of germs that can grow in our bodies?"

"Oh, yes. Some day I'll take you and Paul to the American Museum of Natural History in New York. They have a wonderful germ-garden of almost every known kind of germ."

"Where did they catch them all? Do they travel any way except through the air?" asked Paul.

"Yes, indeed. Dirty water is full of germs and often, even when the water looks clean, it is unfit to drink. That is why it is unsafe to drink from ponds and other places that you know nothing about. Children need to think more about what they put into their mouths. Here is a picture that I took the other day. The apples look so pretty and shiny because the man had just spit on them and polished them with his dirty handkerchief."



"And now the little boy is putting all that dirt into his mouth!" exclaimed Ruth. "Oh, how horrid!"

"Yes, isn't it?" agreed Father, "and I've seen children put pencils, pennies, dirty fingers and other dirty things into their mouths."

"Is there any way to kill germs, Daddy?" asked Ruth.

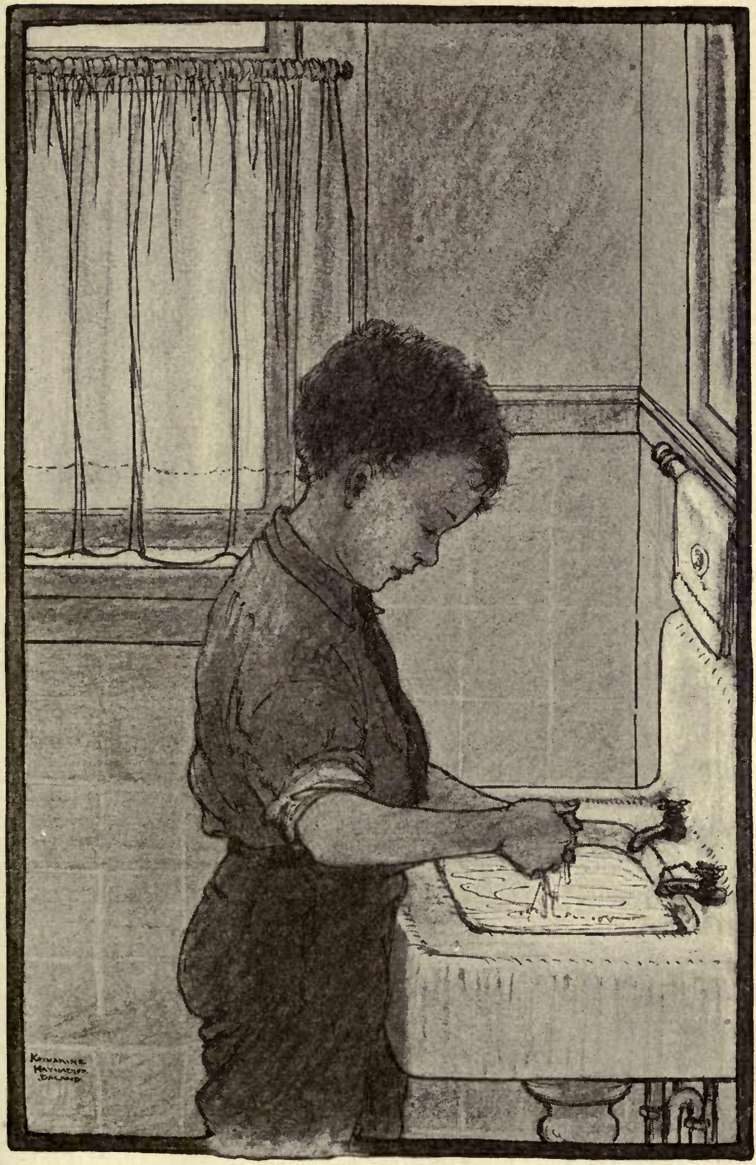
"Oh, yes. Bright sunshine will often kill them. So will some liquids, like peroxide of hydrogen. When you cut your finger, Mother washes it, puts on peroxide, and binds it up to keep the dirt and germs out. Another way to kill germs is to boil them."

"Is that why Bridget boils the clothes on washday?" asked Ruth.

"Yes. You know our bodies and our clothes get just covered with germs. Hello, Paul! It looks to me as if you had a promising germ-garden right here." Father held up Paul's plump little hands. "Dear me! Ten gardens and about ten million germs in each of them!"

As Paul hurried away to the bathroom, Ruth said, "I always knew that it was impolite and didn't look nice to be dirty, but I never knew before that dirt made us ill. I'm going to get all the sunshine I can, so as to kill the bad germs. I don't suppose I can boil myself, but I'm going to scrub myself until they get discouraged and go away."

"That's right, Ruth," said Mother, "you know the proverb says, 'Cleanliness is next to godliness.' That means that being clean usually means being well, and being well is the first step to being good."



THINGS TO DO

Let us make some potato traps for germs as Paul's father did. For each experiment that you wish to try, get an old saucer and a tumbler. Then after washing these clean, boil them for twenty minutes and leave them in the water till you need them. Also boil a clean-washed potato, not breaking the skin. Boil a knife at the same time. Take the saucers out of the water, but do not wipe them, and on each lay a slice of the potato, cut with the boiled knife. Cover each slice with a boiled tumbler. We do all these things so carefully, so as not to plant any germs on the potatoes before we set our traps. Perhaps your teacher will do all this for you.

Now put one slice of potato on a saucer, and set it, uncovered, in a sunny window. Put some dust from the floor on another slice and cover it again with the boiled tumbler. Find someone with dirty fingernails, and after he has cleaned them with a clean file, let him put the scrapings on another of your potato slices. On another slice put a few drops of clear pond-water. Get a clean toothpick, scrape between your teeth, and rub the toothpick over another potato slice. After all the slices of potato have been prepared and are covered up with the glasses, set them in a warm dark place for a few days. Then look at them. Which ones have germ gardens growing? Which not? What kinds of substances seem to have germs on them? What kinds of places do germs like to grow in?

(Plain agar slants or plates are effective, if the teacher can get them. State and City Boards of Health will often furnish them free to schools, if the glassware is returned.)

THINGS TO REMEMBER

Germs are so tiny that we cannot see them, except with very strong microscopes. There are millions of them, and they are everywhere. But nine-tenths of them are our good friends. They help to decay vegetation, and so make good garden soil for us. They help us to make cheese, butter, to tan leather, to make vinegar and other useful things. The germs that are dangerous or harmful live on foods that we need, and spoil them. Worse than this, they live in our bodies and those of other animals and plants. Here they may cause sickness or death.

Because we cannot see them, to tell the good ones from the bad, we must learn to control all of them. We must keep them away from our bodies, and out of our food and our homes, as well as we can. We can do this through learning how they live and behave.

We know that germs are like seeds of plants, because they need moisture, food and a warm temperature to grow. Bright sunlight checks their growth.

We know that germs living in people's bodies often cause sickness, and that they may start that same sickness in other people, if they can get into other people's bodies. Therefore, to prevent sickness from spreading, we try to prevent live germs from getting carried about, from the sick to the well.

We know that we must be careful not to let discharges from our mouths and noses get into the air by coughing or sneezing carelessly.

We know that we must always wash our hands and clean our nails before eating or preparing food for other people. We must not put fingers into the mouth.

We know that when people do any kind of cleaning they should raise as little dust as possible.

We know also that the city we live in, and also the state, have laws to protect us from germs. Some of these laws compel people sick of certain "catching" diseases to keep away from well people. One rule makes the doctor put a card on the front door to tell people when a "catching disease" is inside. Another law makes people get vaccinated. Other laws provide us with public-health nurses and doctors. We should be willing to obey these rules, even if we do not like them.

Our cities have other laws to protect our foods, our water and our milk supplies from germs which might spoil them through careless handling by thoughtless or dirty people. We should try to find out what these laws are, and help the city keep them. This is the sign of the good citizen.

THINGS TO THINK ABOUT

1. How can we prevent germs from growing in our homes?
2. What are the health-reasons for washing hands before handling food?
3. What are the health-reasons for carrying a clean handkerchief?
4. How will the careful housekeeper sweep and dust? How is your school cleaned? Could it be better done?
5. There is a Good-Health Club in Louisville which promised the school nurse not to put pencils or fingers in their mouths, or to take bites of each other's lunches. Why did the nurse ask this of them?
6. What are four things that we know about germs which will help us to prevent sickness from spreading?
7. What Health Rules could you make about germs from what you learned about them in the "germ-traps"?
8. What are some rules that your town has made to keep its people well?
9. What can you do to prevent the spread of germs in your school? In your home?

CHAPTER XV

SOMETHING ABOUT FLIES

"BANG!" shouted Paul. He jumped out from behind the arm-chair and pointed a cane at his Father. "This is my gun, Daddy, and I am Teddy Roosevelt shooting lions in Africa."

"Dear me," exclaimed Mr. Weston, "I didn't know that you were such a great hunter. It is a shame for you to be killing only make-believe lions. Come into the kitchen. When I was out there just now I saw a dangerous wild animal—far more dangerous than a lion."

Paul's eyes opened wide—"Really, Daddy?"

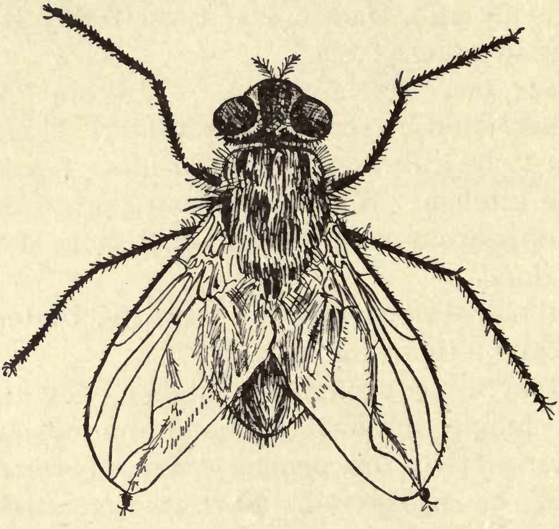
"Really. Come on."

As they went through the kitchen door, the brave hunter clung to his Father's hand and looked hastily around in all the dark corners. "I don't see anything, Daddy," he whispered. For answer, his Father pointed to the gas-jet. Paul stared at it for a moment, then he exclaimed, "Why that isn't a dangerous wild animal—it's only a fly!"

"Only a fly!" cried Father. "I'm afraid you don't know much about flies. Go get Ruth and bring the magnifying glass from my desk. I want to tell you something about this dangerous beast."

A few minutes later, Ruth and Paul were standing on a chair by the gas-jet while they took turns looking at the fly through the magnifying glass. "He does look wild," said Ruth. "What big eyes!"

"Yes," agreed Father, "he can see in all directions. He can smell very well, too. He and his family always know when Mother is baking pie or cake and come hurrying to get some. However, I think they like garbage just as well."



"His legs and body have little hairs all over them," said Paul.

"Yes, but he never uses a brush and comb. He wipes the dirt off his face with his front legs, then he wipes it off his front legs onto his hind ones, then he wipes his hind legs over his wings. You see, he just keeps wiping it off one place and onto another. But he never dreams of taking a bath."

"Except when he falls in," put in Ruth. "I saw a fly in the milk pitcher at a restaurant, once."

"How does he eat, Daddy?" asked Paul. "Has he any teeth?"

"No, he has no teeth. You can see that he has a sort of trunk, like an elephant. He sucks his food up through this tube, just as you suck lemonade through a straw."

"Well, but how does he eat bread and sugar and solid things?"

"In a very impolite way," said Father. "He spits on the bread or sugar and gets it all wet and partly dissolved and then sucks it up."

"Oh, how perfectly horrid!" cried Ruth. "I don't wonder that Mother tries to shoo all the flies out of the dining-room."

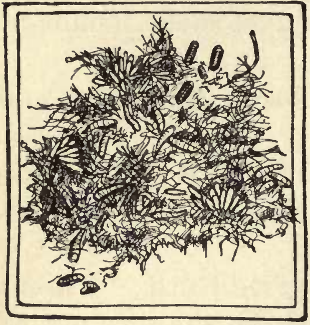
"Another of his disagreeable ways," said her Father, "is this." He pointed to some little grayish spots on the window-pane. "You see, the fly is very greedy. He doesn't eat between meals, because there isn't any 'between'—life is just one long meal for him. Now when he has just come perfectly stuffed from the garbage-pail, he may find on the supper-table a delicious piece of cake. He promptly 'throws up' his last meal to make room for the cake and eats it. These spots on the pane are made that way."

"I always heard," said Ruth, "that flies were dirty, but I never knew before how nasty they are."

"Well, you see, Ruthie, the fly is born and brought up on dirt, so he likes it."

"Are the little flies babies?" asked Paul.

"No, flies don't grow. The little ones are usually another kind of fly. Mr. Fly, up there on the gas-jet, was once a tiny white egg, so small you could hardly see him. His mother laid him early one Sunday morning with about 120 of his brothers and sisters on a heap of manure over in Mr. Dix's livery stable. I'll draw you a picture of the flies' nursery. It was warm and dark and damp there—a fine place for the eggs. With a strong magnifying glass you could have seen the eggs like this. That afternoon, Mr. Fly crawled out of his eggshell."



"Did he look as he does now?" inquired Ruth.

"Oh, no, he was a tiny, wriggling, white worm, or maggot, like this. He burrowed into the manure, eating and squirming about with the rest of the family, until on Thursday he began to feel sleepy. Then he made himself a brown case, like a cocoon, and rolled up and went to sleep in it. A fly's cocoon is called a 'pupa.' Here are several of them."

"And when did he wake up, Daddy?" asked Paul.

"He did not wake up for five days, but on Monday morning he gave a big stretch and cracked the pupa-case and out he came—a fly! His wings were wet at first, but they soon dried and he flew away."

"Where did he go?" chorused both the children.

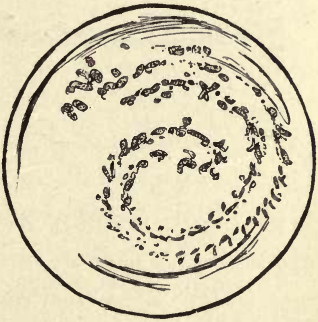
"He smelled something that he thought delicious. It was Mr. Cole's pig-sty. He had a delightful breakfast from the pigs' trough and then he flew lazily away and into the grocery. Mr. Mullins had some ginger-snaps for sale on the counter and Mr. Fly wiped the pigs' feed from his feet on to the ginger-snaps and then buzzed away."

"Mr. Mullins ought to keep his cookies covered up," said Ruth, decidedly.

"So he ought, but he doesn't, and that is why Mother goes a block further to buy from Mr. Hughes' store, where everything is covered and kept clean. You see, each of the fly's six feet has on it two pads that are all sticky, so he can walk on the ceiling. These twelve sticky pads pick up every kind of dirt from streets, stables, outhouses, pig-pens and every sort of filthy place. Do you remember what I told you the other day about the disease-seeds that we call germs?"

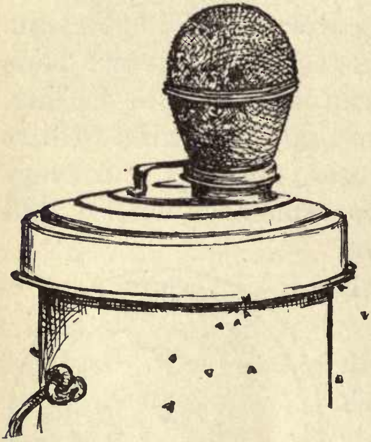
"Oh, yes," cried both children. "Of course we do."

"Well, Mr. Fly, in his travels, becomes just loaded down with germs. He usually carries over a million of them. Paul, please bring me the red book lying on the parlor table." When Paul returned with the book, his Father opened it to this picture. "Here," he said, "is a photograph of the germs left by the feet of a fly. Just see how many germs Mr. Fly leaves on our food if we give him a chance."



"What diseases do flies carry, Daddy?" asked Ruth.

"They carry typhoid fever, tuberculosis, summer complaint and even smallpox. I'll draw you a picture of something I saw yesterday in the railroad station. A baby was sitting like this, enjoying his bottle. Beside him, on the floor, was a spittoon. The flies were drinking from it and then lighting on the nipple of the bottle. Perhaps someone with tuberculosis had just used that spittoon."



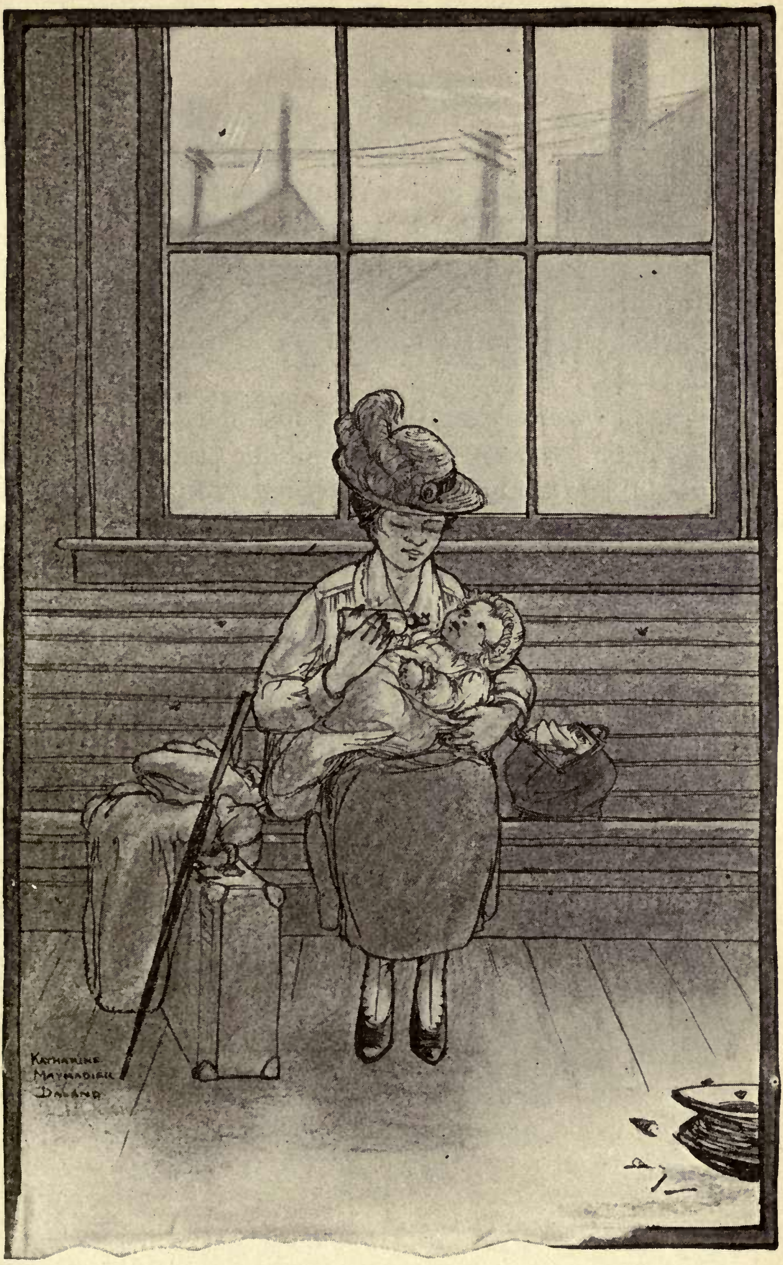
"Didn't his Mother shoo away the flies?" asked Paul.

"No, I suppose she thought, like you, that they were 'only flies' and didn't know that they might kill her baby."

"I'll tell you, Ruth," said Paul, "when we get our allowance money tomorrow, let's each buy a wire fly-swatter. We'll use one to kill all the flies here and give the other to Mr. Mullins, so he can keep them off his ginger-snaps."

"He wouldn't have time to kill flies and wait on people, too," said Ruth. "I think a trap would be better."

Father had opened the red book again. "Traps do help," he said. "Now here is a trap that was invented by Professor Hodge of Clark University. It


KATHARINE
MAYNADIER
DALAND

is in the lid of the garbage can, you see, and all the flies who come to feed on the garbage crawl up into the trap and are caught. Professor Hodge caught 2500 flies in this trap in less than an hour. If we could catch and kill all the flies in the beginning of the summer, before they lay their eggs, just think what a difference it would make."

"Yes," said Paul, "with every Mother fly having 120 babies."

"Oh, it's worse than that," said Father, "for every fly lays eggs several times during the summer, so she has about 1000 babies, and each baby, in about three weeks, is grown up and having babies of its own."

"Goodness!" exclaimed Ruth. "How can people ever get ahead of them?"

"The great thing to remember," said Father, "is that flies love dirt. If the manure was all carted away every week and spread out where the sun could kill the eggs and worms, if all the houses had bathrooms and proper plumbing, if all the garbage pails were covered, and if every house and street and yard were kept clean, the flies would have no place where their eggs could hatch and where they could eat and enjoy themselves."

"What happens to the flies in winter, Daddy?" asked Paul. "Do they all die?"

"Most of them—but some crawl into bakeries, and greenhouses and other warm places, or hide in the cracks of walls, and live until spring. Then they lay their eggs and soon the flies swarm just as thickly as ever."

"So we ought to try especially hard to kill the flies in spring, oughtn't we?" said Ruth.

"Yes," said Father. "When I was a boy we used to have a rhyme about it. It went like this:

" 'Kill a fly in Spring—you've done a splendid thing.
Kill a fly in May—you've kept thousands away.
Kill a fly in June—and they'll be scarcer soon.
Kill one in July—you've killed only one fly.' "

THINGS TO DO

Form a "Fly-Fighters' Brigade." Every member must own a fly-swatter. You can make your swatter out of a double fold of wire screen fastened between two thin strips of wood. Keep a score of the number of flies you have destroyed. Let your goal be a "flyless" house and a "flyless" school.

If there are any good carpenters among you, you will enjoy making a fly-trap. Send four cents to the International Harvester Company, Chicago, Ill.—the Agricultural Extension Department. Ask them to send you the plans for a fly-trap. When the trap is made, set it where there are many flies.

THINGS TO REMEMBER

A mother fly will lay more than 120 eggs at once. In a few hours these eggs hatch into little white worms called maggots. Each eats the decayed material on which it was laid, and in four or five days changes into a motionless creature called a pupa. The pupa rests for five or six days. At the end of that time the pupa skin splits, and a full-grown fly comes out. In about three weeks these young flies lay eggs themselves. A fly lays eggs three or four times during the summer. Therefore, every fly we see in spring should be killed to prevent thousands more later on.

The feet of flies are covered with hairs. On the bottom of each foot there are two sticky pads, which help the fly to walk on the ceiling. Flies lay their eggs in filth of all kinds. They eat not only our food but all kinds of decaying material in which germs of disease may be. So they travel back and forth from filthy places to our food or dishes. They pick up germs on their hairy and sticky feet. Thus seeds of disease are carried by flies into people's food.

The only way to prevent this spread of disease by flies is to get rid of every single fly. The best way is to destroy their breeding-places by screening all manure heaps which cannot be removed, by keeping garbage cans covered, by keeping streets, alleys and all premises perfectly clean.

Next we can make fly-traps. We can have fly-swats close at hand to kill stray flies. Of course, we will screen our houses. Besides this we can persuade merchants to screen their places by refusing to buy any food which flies can reach.

THINGS TO THINK ABOUT

1. Tell the story of a fly's life. Knowing this, you will surely destroy any places where it could develop.

2. What do you know about a fly's body and habits which explains why he is so dangerous a carrier of sickness?

3. What kind of a grocery or bakery or dairy do you want your food to come from? Why?

4. What things can boys or girls do at home to protect their families from flies? How many will you undertake to try? Your teacher will keep a record for you of how many fly-fighting duties you do for a month.

CHAPTER XVI

"LITTLE DROPS OF WATER"

"OH, dear," sighed Ruth, one September morning. "Isn't it too bad, Mother, that we have to leave the beach and go back home to school? I just love the water. I'd like to be a mermaid and live in it."

"So would I," cried Paul. "I'd like to be a diver."

Mother smiled. "I suppose the reason why children love the water so much is that they are mostly made of water themselves."

"Made of water?" echoed Ruth. "Why, what do you mean?"

"Just what I say," replied Mother. "The world and all the living things in it are mostly made of water."

Ruth hesitated. "Well," she at last remarked, "of course, I learned in geography class that two-thirds of the world is lakes and oceans and other kinds of water. I don't quite see how *I* can be."

"Oh," said Mother, "we aren't *all* water, of course, but grown folks are more than half water, and babies and children are about three-quarters water."

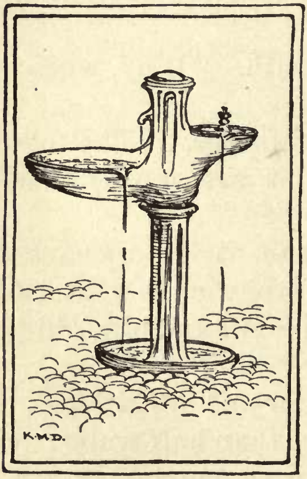
Ruth still looked puzzled. "You know, Ruth," Mother went on, "how much more juicy young corn and beets and celery are than when they are old? All young things have a good deal more water in them. Now, the body is constantly losing water through the kidneys, through perspiration, and in steam—or what we call breath—from the lungs."

"Oh, yes, I've often seen my breath on cold days," agreed Ruth.

"So," said Mother, "you can readily see that we must drink a lot of water, to make up for what we lose."

"How much ought we to drink?" asked Paul.

"That depends," replied Mother, "on several things. In summer, or in a hot engine-room, or when we are playing very hard, so much water runs away in perspiration that we get thirsty and need to drink plenty of water. If we eat dry things, like corned beef and toast and crackers, we need to drink a good deal more water than if we have soup, milk and juicy fruit and vegetables. Some people seem to need more water than others, but a good rule is to drink six or eight glasses a day."



"Is it all right to drink at meals?" asked Ruth.

"Yes, only you must be careful to chew your food thoroughly and not use water to wash down great chunks of it."

"Rover gets awfully thirsty," said Paul.

"Yes, some folks seem to think that cats and dogs never need any water. Yesterday, I saw Mr. Benson

—you know he is the head of the Humane Society—and he gave me this sketch of a drinking fountain that he is going to build."

"Where is it to be put?" asked Ruth.

"In the middle of Market Square, where so many teamsters come to water their horses. See, down below, is a nice little basin for the thirsty Pussies and Rovers. And above, where the people drink, there is no dirty cup to carry disease germs from one person's mouth to another's, but a clean, bubbling fountain. Mr. Benson says that, just as horses get the 'glanders' from drinking from a common trough, so people get diseases from a common cup. He had already provided for the horses and he thought he ought to do as much for the teamsters."

"Jimmy Smith has a dandy book," said Paul. "It tells how some boys were shipwrecked and couldn't drink the salt water, so when it rained, they spread out a sail and caught the rain and drank it."

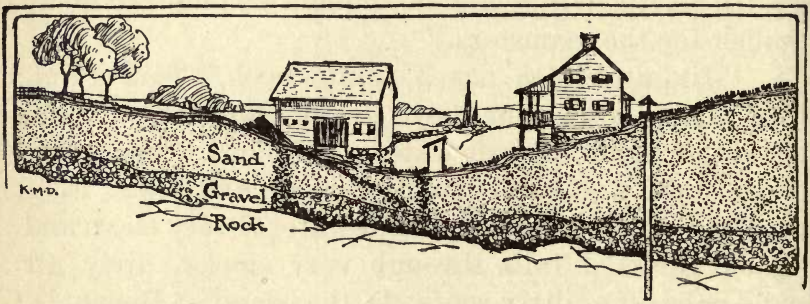
"Yes," said Mother, "rain-water is very clean and good unless it falls through very smoky, dirty air and runs off of dirty roofs. In the island of Bermuda, I've heard, they drink nothing but rain-water. In some places people drink the water of lakes, or rivers, or springs, but all such water that lies on top of the ground is very likely to be spoiled by dirt and disease germs."

"But wells are safe, aren't they?" asked Ruth.

Before Mother could answer, Paul put in, "How does the water get into wells? And why does it stay there? I should think it would run away."

"Perhaps I can explain it," said Mother. "Bring me some sand in this glass, please, Ruth." Ruth ran out on the beach and in a moment returned with the glass full of sand. Mother gently poured a little water on the sand. It sank quickly through to the bottom of the glass.

"There," said Mother, "that is what happens when it rains. The rain soaks down through the sand and pebbles, until it comes to a layer of clay or solid rock—just like the bottom of our tumbler. It can't go through that, so it stays there. When we build a well, we dig down through earth and gravel until we come to the rock where the water is."



"Well-water is all right unless something drops down into it, isn't it, Mother?" asked Ruth.

"Let me show you how the well on the Alcock place was poisoned," said Mother "Dr. Clarke explained it to me last summer. Here, you see, is the well. The rain trickles down through the earth and sand above and lies in a pool on the rock—just as it did in our tumbler. But now see what happens. All the filth from the barnyard and outhouse is also washed down through the earth and trickles into the well. Besides, the brick at the top and sides of the well is not tight, so all the surface dirt can get in. The Alcocks were made dreadfully sick by that water."

"I remember now," said Ruth, "the Alcock twins were away from school a long time last year. They said Mrs. Alcock had to boil all the well-water."

"Yes, you know that boiling kills disease-germs. So whenever you aren't sure that water is safe, you can make it so by boiling it."

"But that's an awful lot of bother," said Paul.

"But being sick is more bother yet," said Mother.

"If water looks all right, is it safe to drink it?" asked Ruth.

"Not always. Even clear, delicious water may be full of germs. You remember that Father told you that the germ-fairies were too small to see."

"But how can we tell, then?" Ruth looked discouraged.

"In most cities," said Mother, "the Board of Health examines the water and tells the people when it is unsafe and has to be boiled."

"And in the country?"

"In the country, the only safe way is to do, before digging your well, what Mr. Alcock did after his family was made sick. He sent for a man who knew all about water and which way it flows in different places. This man examined a drop of water and found typhoid germs in it. Then he showed Mr. Alcock how the rock under his farm sloped so as to carry the filthy rain from the barnyard and house right into the well. Now Mr. Alcock is building a new well in a safe place."

"Dear me," said Ruth, "I'll be afraid to drink at all after this."

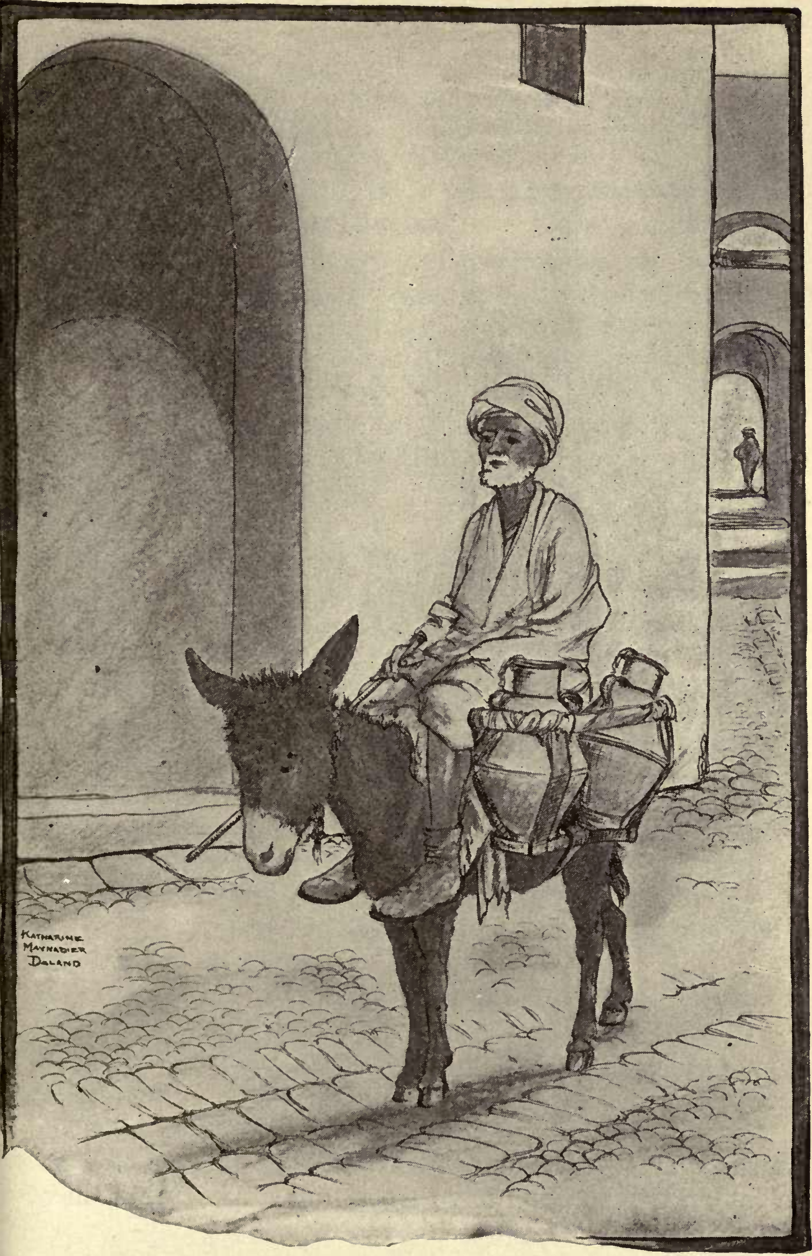
"Nonsense!" exclaimed Mother. "Drink all you can—most people drink entirely too little. Only we ought not to drink from shallow pools or from any water that gets the drainage from houses and barns. And don't ever throw any garbage or dishwater or any other dirt near a well, or other drinking water. And remember that boiling kills germs."

"I'm glad we don't have to buy our water," said Ruth. "In geography class yesterday, Miss Long told us about how they sell water in Africa. See, here's the picture of the water-seller in my geography."

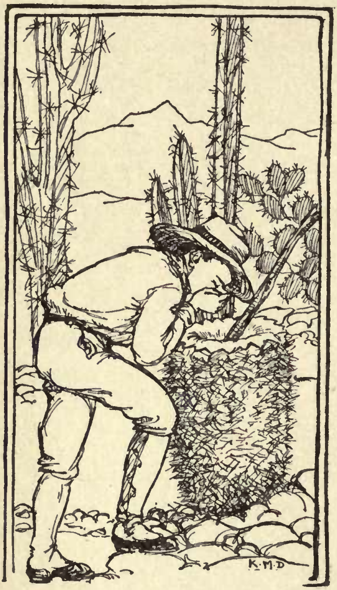
"How terrible it must be," said Mother, "not to have all the water one wants."

Just then Father came in. "What's this?" he cried. "Is anyone dying of thirst? Luckily, I brought home some fine, juicy lemons. Let's have some lemonade."

While Mother was washing and squeezing the lemons and Ruth was getting the glasses, Paul told his Father all he knew about water. "I wonder," said Father, "how you would like to do as I had to, one time when I was in Mexico, in the desert. Wait a moment and I'll show you an old photograph of myself taking a drink. This is a barrel cactus. Its roots gather water and it is stored in the plant. My Indian


KATHARINE
MAYNADIER
DALAND

guide cut off the top of the cactus and mashed up the pulp with a stick. After he had squeezed the pulp and thrown it away, a lot of clear water was left."



"Did it taste good?" asked Paul.

"It quenched my thirst, but it tasted rather salty—not nearly so good as our lemonade. And hurrah! Here comes Mother with a big pitcher of it!"

THINGS TO DO

Think of all the ways we have of making our water good to drink. Then take some muddy water and see if you can make it clear. Can you make a filter. Can you "distill" it? What would you have to do to make the water safe to drink?

Do you have a drinking fountain in your school? Watch the children use it and decide if you think it sanitary. Learn how to use the fountain properly and teach the younger children how.

THINGS TO REMEMBER

We need to drink from six to eight glasses of water a day to provide our bodies with what they need. Because water is so necessary for us we must be sure it is pure. Rain-water is pure, unless it runs over dirty roofs and gutters, or stands where dust can blow into it. So cisterns and wells must have tight tops. They must have tight walls also. Otherwise, water from the ground can seep into the well. Such water may carry disease germs from stables or outhouses. People who use well or cistern water should have it tested often to make sure that it is safe. Spring water, too, may look clear, but have germs in it. No spring water is safe if the spring is close enough to houses or barns for water from them to reach the spring. No matter where water comes from, we can make it safe by boiling it fifteen to twenty minutes.

Most cities take special care to give their citizens safe water to drink. When city people go to the country they should never drink water from wells or springs without first finding out if the water is safe.

Some things to remember particularly about water are:

Drink plenty.
Drink from a *safe* water supply.
If you don't know whether the water is safe, boil it.
Use your own cup, or a sanitary fountain.

THINGS TO THINK ABOUT

How much water do you drink daily? Is it enough?

Do you know where your water comes from? How is it made safe for drinking?

Have you your own drinking cup? How much money must you earn to buy one? What kind should it be?

Can you tell where rain-water comes from? Why is it sweet and clear, though ocean water is salt and river water is often muddy?

Can you tell why cistern water may be unsafe to drink?

Is all clear water safe? Can you tell why spring water is clear? Why is it sometimes not safe?

Why do people sometimes have typhoid fever after picnics in the country?

Make some water-rules that, if kept, would help keep people well.

CHAPTER XVII

CLOGGING THE FURNACE

ONLY A COLD

"O, MOTHER," cried Ruth, throwing down her school-books and catching up her skates, "we had such a funny time this afternoon."

"What happened?" asked Mother.

"Well, you know we always recite 'pieces' on Friday, and Dorothy had to give 'The Village Blacksmith.' She had a perfectly awful cold in her head and this is how she said it." Ruth pinched her little, pink nose between her fingers and recited:

" 'Udder a spreadig chestdut tree,
The village sbithy stads.
The sbith a bighty bad is he,
With large ad sidewy hads'—

and then Dorothy stopped and said 'A-ker-choo!' Oh, it sounded so funny and Dorothy looked so solemn that we all got the giggles. Miss Scott smiled, too. I saw her trying not to."

"Poor Dorothy!" said Mother. "She ought to have been at home, instead of trying to speak her piece."

"Oh, she wasn't sick at all," said Ruth. "She was playing 'Hunt the Whistle' all recess time. It's lot of fun. It's like Blind Man's Buff, only the one who is 'It' has a whistle tied around his neck and all the others try to blow it without getting caught."

Mother suddenly looked serious. "I think, Ruth," she said ,"that you had better gargle your throat with some hot salt water."

"But why, Mother? I haven't a sore throat."

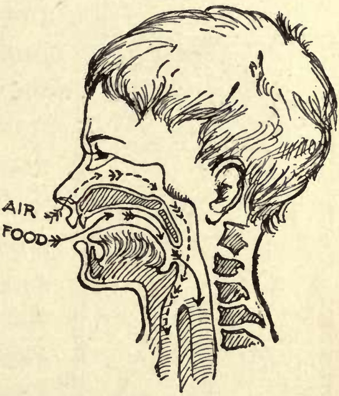
"Ruth, do you remember what Father told you one day about the seeds or germs that cause diseases?"

"Oh, yes, I remember all about them."

"Well, colds are generally, if not always, caused by a germ, or several kinds of germs, getting into the nose or throat. Now Dorothy's nose, from what you say, must be just alive with these germs. And yet she has been putting that whistle into her mouth and all you children have been putting it into your mouths and so getting a nice collection of her germs. It will be a wonder if the whole school doesn't come down with colds in a day or so."

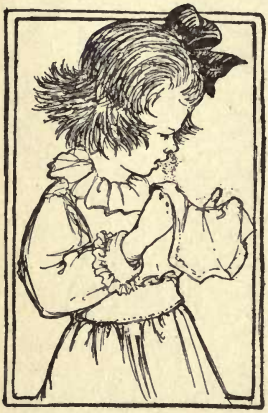
"Mother," Ruth began.

"Go gargle your throat, to kill any germs you may have caught, Ruthie," said Mother, "and when you come back, I'll answer your question."



A few moments later, Ruth entered the room with her objection all ready. "But, Mother, Dorothy didn't put her *nose* to the whistle." For answer, Mother held up a book with this picture in it. "I want to remind you, Ruth, though perhaps you remember it, how your nose, throat and mouth are all connected.

The air comes in here through your nose, which is hairy and warm and damp inside, and so moistens and warms and cleans the dust from the air as it comes in. Then the air goes on down through the windpipe to the lungs. Here, through the mouth, the food goes in and down through the food-pipe to the stomach. Now Dorothy's nose, you say, was all stopped up. That means that it was just full of germs, and of course these germs must have slid down also into her throat and mouth. You should never put into your mouth anything that has been in another person's. Never use a public towel or drinking-cup, or bite another person's apple or cake in the same place where he has bitten it. And, of course, never put dirty things like pennies, pencils and so on into your mouth or near your nose."



"Dear me, I never thought about it," said Ruth.

"The reason I said Dorothy should be at home, not in school," said Mother, "is partly that children are apt to forget such things, and partly that colds are so catching. Then, too, children often forget to cover their noses with a handkerchief when they sneeze. If there were a strong light on Dorothy when she sneezed, you would see a perfect spray of tiny drops like this—every one of them full of germ-goblins—just ready to hop into someone else's throat."

"What do they do to your throat?" asked Ruth.

"They are likely to irritate the soft lining and make it red and inflamed. You begin to feel chilly, your head feels heavy, and you say, 'I think I've caught cold.' "

"But some children are always catching colds and I almost never do."

"That is because your body is in such good condition that the germs don't have a chance to grow in it. You know germs, like all other plants, need the right kind of soil to grow. Now, if you had adenoids, up here, or if your tonsils, down here, were too big, they would make fine places for germs to grow in. Some children, too, have decayed teeth or diseased gums. A dirty mouth is just a picnic-ground for the germs."

"Is smoking good for a cold?" asked Ruth.

"Oh, no! The tobacco smoke makes the tender lining of the throat sore and is very likely to pave the way for a cold."

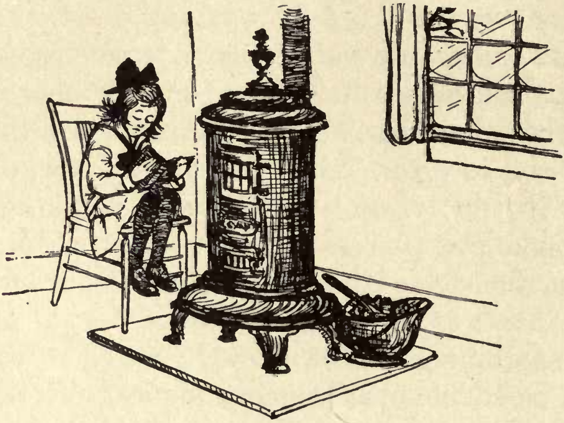
"But I don't think Dorothy has adenoids, and her teeth are nice and white, yet she's always having colds."

"Perhaps," answered Mother, "she's like a little girl I know, who loves, on a winter day, to sit indoors over the stove and read. You see, the window is tight shut, so no cold, fresh air can get in. Do you remember, Ruth, what happened to the fern that night when it was left by mistake on the radiator?"

"Yes, it all dried up and got yellow and sick."

"That is just what happened to this little girl. She breathed the hot, dry air from the stove, and sat humped over, and she grew pale and sickly and caught one cold after another. And the more colds she had, the more afraid she was of going outdoors."

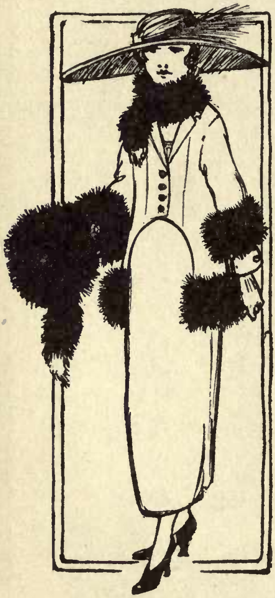
"Oh," said Ruth, "that reminds me of a picture that Uncle George gave me. It's his little sister, up in Canada."



"What a red-cheeked, happy little girl!" said Mother. "You see, Ruth, germs hate cold, fresh air and sunshine. Being cold doesn't mean 'catching cold,' at all. When the famous explorer, Nansen, went to the Arctic regions, he was terribly cold, but he and his companions never caught cold at all. If you do get wet, keep moving. I remember once Father and I were walking in the country and it began to rain. It simply poured and we were wet through, but we trudged along and enjoyed it. As soon as we got home, though, we took off all our wet clothes, rubbed ourselves hard, so we felt warm all over, and put on dry clothes. It didn't hurt us a mite."

"But I got my feet wet one day going to school, and I caught an awful cold," said Ruth.

"That was because you sat still in your wet shoes. As soon as you stopped walking, your feet grew cold. If you get wet from rain or perspiration, always change your clothes if you possibly can. Change your stockings and warm your feet. At any rate, don't sit down and get a chill."



"Rose Smith wears short stockings, even in winter. I should think she'd be awfully cold," said Ruth.

"It probably wouldn't hurt her if she went pretty much without any clothes," replied Mother, "like some savages, who are used to having their whole bodies uncovered. But it is very foolish to bundle up one part of the body and leave another part unprotected. This is how I saw a lady dress to-day. You see, the upper part of her throat is all muffled up in furs, and just below, her neck is quite bare. Here, where her coat is cut away, her stomach, or abdomen, as we ought to call it, is likely to be chilled and her digestion upset. Her ankles are covered with only the thinnest silk stockings and her shoe-soles are so thin that her feet must be almost frozen. You know, when any part of you is cold, the little blood-tubes grow smaller, so it is hard for the blood to get through. How do you suppose the blood in that lady's body is going to keep her warm and well?"

"It wouldn't be so bad," suggested Ruth, "if she were playing tag—that would keep her warm. But she's just mincing along."

"Well," said Mother, "I think it is high time, Daughter, for you to get on your skates, before the sun goes down. A good skate in this clear, cold, sunny air will drive all Dorothy's germs out of your nose and throat, I'm sure. Besides, you must get up a rousing appetite for supper. We're going to have—but, no, I'll let you guess. Now run along and bring home that appetite with you."

THINGS TO REMEMBER

Colds are caused by germs growing in the nose and throat. If we have adenoids or enlarged tonsils the germs seem to have an easier time growing in noses or throats. If we have decayed teeth or sore gums these places also seem to give germs a foothold. A clean nose, mouth and throat is the *first step* to prevent colds.

If we get our skins used to cold through fresh air and cold water, then we shall not "take cold" so easily, when the weather is severe or rainy. When the skin is well trained, the blood is quickly brought to the surface all over the body, by cold air or cold water. The skin glows, and we feel warm. We do not take cold in the rain, as long as we keep moving, and keep the blood circulating, so that the body is warm all over. If we get our feet wet, we should, if possible, take off the wet shoes, and rub the skin until it gets hot and red. A clean skin, used to fresh air and cold water, is the *second step* to prevent colds.

We should cover the body evenly, not wear too heavy garments. Sensible folks use rubbers, raincoats and umbrellas when it rains, but remove warm or heavy clothes indoors. Proper clothing is the *third step* in preventing colds.

Colds are spread by people who cough or sneeze without catching the spray with a handkerchief. Colds may be caught by putting in the mouth things that have been in the mouths of others having colds. Germs may sometimes be prevented from growing if we wash out nose, mouth and throat with warm salt water.

So the *last step* in preventing colds is to avoid coughs and sneezes of people with colds. If this is impossible use the warm salt water bath for nose and throat (one teaspoon of salt in a pint of water).

THINGS TO THINK ABOUT

How are our noses and throats protected from cold germs?

Do we have to have colds?

In what kinds of mouths and noses do germs grow best?

How can you train your skin to protect you from colds? Have you done so?

What is the proper thing to do on coming home with wet feet? Why?

What would you do to avoid a cold if you came to school with wet feet?

What do clothes have to do with taking cold easily?

It is bad manners to sneeze or cough without a handkerchief. Why else is it bad?

How can we keep nose, mouth and throat clean?

Do you know anybody who never has colds? Can you find out what health-habits that person has to keep him well?

Why is open-air exercise a good way to ward off colds?

CHAPTER XVIII

Frauds Instead of Foods

It was New Year's afternoon. Uncle George, Aunt Louise, Father and Mother were sitting around the fire talking, while Ruth poured "cambric tea" for Paul out of her Christmas teapot. Generally Paul didn't pay much attention to the tiresome talk that grown folks enjoy, but suddenly he became interested. Uncle George was saying, "Yes, liquor has ruined Will Frost. He used to be a splendid young fellow, and look at him now."

Paul looked up from his cup of cambric tea. "I know whom you mean. You mean Dorothy Frost's father."

"Oh, yes," chimed in Ruth, "Dorothy told me her Father had a whole lot of beer for Christmas and New Year's."

"Now, children," said Mother, "please don't say anything to Dorothy or to anybody else about Mr. Frost's drinking. It is very hard for Mrs. Frost and we mustn't make it any harder by letting her think it is being talked about. We don't, any of us, like to have our faults discussed, do we?"

"No," said Ruth, "I won't say a word about it; but," she added, "I don't see why beer and wine are so bad for you."

"Come sit on my knee, Ruthie," said Uncle George, "and I'll tell you a story. About ten years ago, Mr. Lucas needed a new factory. I offered to build him a good, strong one, but he said I charged too much, so he hired another architect to build it. This other man did it cheaply, but he used rubbish instead of good building materials. The cement had no strength to it, so it crumbled and fell away from the bricks. The wood was soft and splintery. The steel and iron were full of weak spots. The building *looked* fine, but it was just a make-believe, because, as I said, it was made of rubbish, instead of good, honest materials."

"Did Mr. Lucas find it out?" asked Ruth.

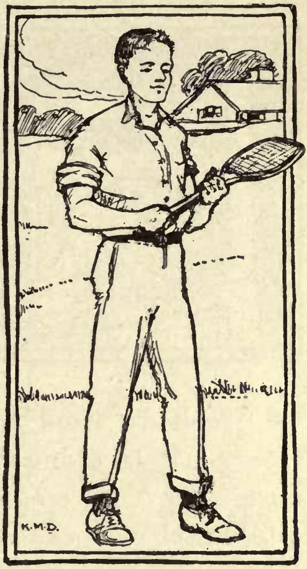
"Yes, in a terrible way, for one day the building fell down all in a heap and killed a number of people. Now perhaps you know that just as factories are built of cement and bricks and iron and wood, so our bodies are built up from the food we eat."

"Oh, yes," cried Ruth, "I know that."

"Well, there are real foods, like milk and bread and butter and oatmeal, and there are make-believe foods, like beer and wine. You might pay ten cents for two glasses of milk, if you were hungry, or you might pay fifty cents for five glasses of beer, but the milk would give you real strength and energy, while the beer would only hurt you. A glass of hot milk makes you warm and rests you and gives you strength, but a glass of beer or wine makes you *feel* fresher, without really giving you any more strength at all, and after a few minutes you are even more tired."

"Oh, yes," nodded Ruth. "It's like my make-believe tea-parties. Sometimes, I pretend so hard that I can almost taste the tea and cake, but if I'm really hungry, I want real bread and milk."

"That's just it," said Uncle George, "but your make-believe tea-parties are fun and don't hurt you, while beer, wine and whiskey do. Just look at this picture. This man is a champion tennis-player."

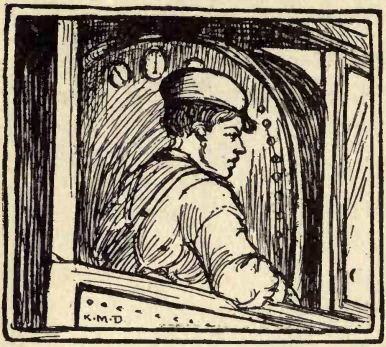


"Why, that's Mr. Holmes. He teaches gymnastics at our school," said Paul.

"Yes, he and I are great friends," said Uncle George. "Well, Mr. Holmes says he needs real, not make-believe, strength for his work, so he never touches alcoholic drinks, such as beer or wine. He said he found they made his heart beat too fast, upset his digestion and made him short of breath. He says no good baseball player, or swimmer or runner ever thinks of drinking beer, or wine, or whiskey."

"Yes," said Father, "and they are even worse for the brain and nerves than for the heart and muscles—they make a man shaky and unreliable. I rode all the way to Chicago in the cab with an engineer once, and he told me that before the railroad company hired him, he had to sign a promise never to touch liquor. Even without the promise, he said he wouldn't dare risk the lives of his passengers by making his eyes and ears dull, and his hand unsteady with drink. He and I became great friends, and when we said good-bye, I took his picture."

"Isn't he a fine, reliable-looking man?" said Mother. "I shouldn't be afraid to ride behind his engine. But most of the railroads now refuse to employ men who drink."



"I knew that wine and beer would make people drunk—and of course that is horrid"—said Ruth, "but I didn't suppose that a little would hurt you."

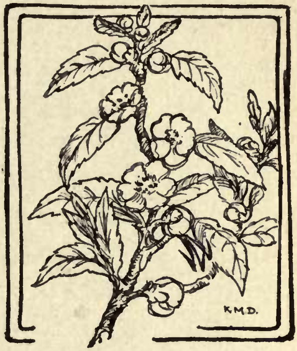
"Nobody used to think so, Ruth," said Uncle George. "In olden times everyone used to drink, and on a New Year's afternoon like this, every lady had a table set with cake and wine for her callers. But of late years, wise men have studied and made experiments with alcohol. They have fed it to men, dogs, chickens, and other animals and have watched the results. Now they know that even if a man never gets drunk, the habit of drinking a little every day makes him less reliable, injures his health, and even makes him die younger than he ought to."

Ruth looked very serious. "Let me tell a Chinese story that I read the other day," said Aunt Louise. "Hundreds and hundreds of years ago, a Hindu missionary came to China. His name was Bodhidharma.

Now, in those days, people used to think that to make yourself uncomfortable was a sign that you were unusually good, so this good priest vowed that he would do without sleep. He kept it up for a few nights and then grew so sleepy that he fell fast asleep. When he awoke, he felt so unhappy about having broken his vow that he cut off his eyelids and threw them on the ground and walked away. When he came back next day, what do you suppose he saw?"

"What?" cried Ruth and Paul.

"Why, his eyelids had sprouted and grown into a queer plant, like this. Bodhidharma picked a leaf and chewed it and found that, like magic, his sleepiness was all gone. And that is how the tea plant is said to have been discovered and why tea keeps people awake."



"Is that a true story?" asked Paul.

"I'm afraid not," laughed Mother.

"I didn't know tea kept people awake," said Ruth.

"Yes, when I was at college," said Uncle George, "many of the boys would fool away their time until just before examinations. Then they used to sit up all night studying and keeping themselves awake with strong tea or coffee. They paid for it in the end, though, for it made them so nervous that they never did so well in the examinations after all."

"Are tea and coffee and beer worse for children than for grown folks?" asked Ruth.

"Very much worse—and this is why. You know that your body is somewhat like an engine with a sort of fire in it. Now, when the real fire in a real grate is not burning well, what do we do?"

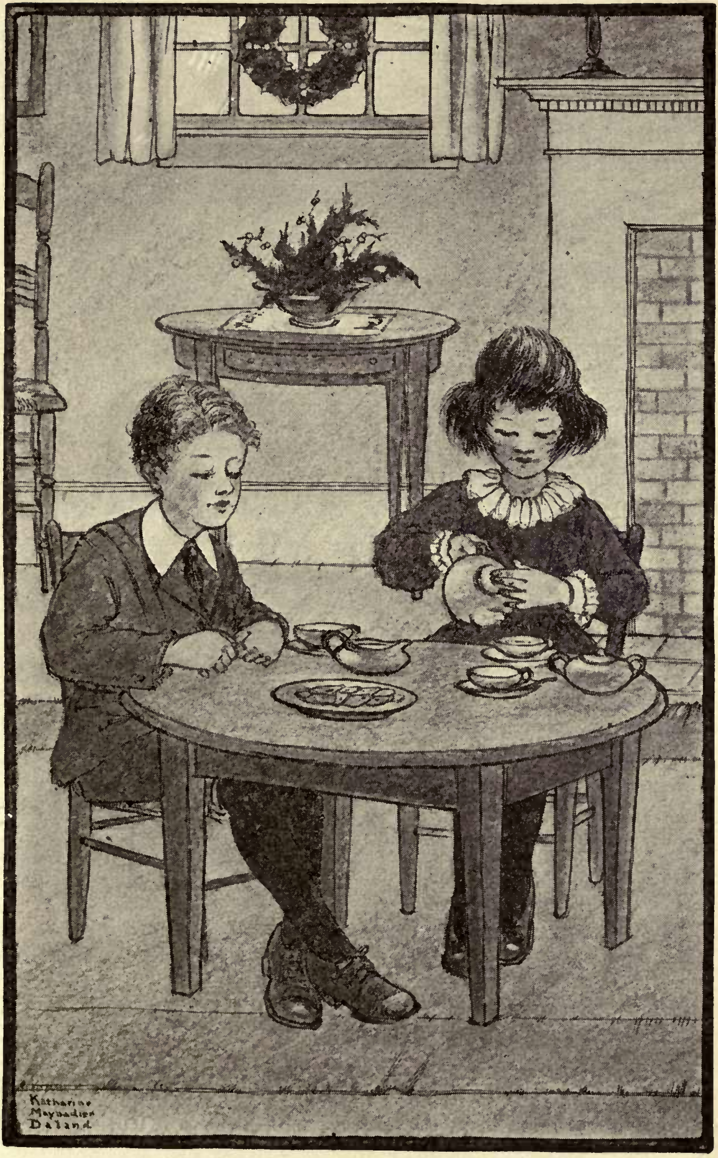
Ruth considered a moment. "Why, sometimes we put on more coal and sometimes, if there is already enough coal on, we blow it with the bellows, to make the coal catch fire and burn."

"Just so," said Uncle George. "Now the fire in children's bodies burns faster and more brightly than in grown people's, so what it needs is not to be quickened up with tea, or coffee, but to be properly fed with good food. Grown people sit around more than children do and often their fire is dull, so a little tea or coffee seems to freshen them and start their fire, but even grown people ought never to let tea and coffee take the place of food, and they never ought to drink very much of either, or drink them strong. As for alcohol, the only safe thing is never to drink it at all, for if a person once gets the habit, he is a slave to it."

"Cocoa is good for us, isn't it?" asked Paul.

"Yes, if it is made very weak, almost all milk. Cocoa is a first cousin to tea and coffee, and if it is made strong, it is almost as bad as they are."

"Well," said Ruth, slipping down from Uncle George's knee, "I think I'll pour some nice make-believe tea into my new cups and saucers and let you all have some. You needn't be afraid to drink it,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Uncle George. It's perfectly delicious and won't keep you awake a minute."

So Ruth poured cambric tea into the pink cups and while she and Paul drank theirs, Uncle George took this picture of their tea-party.

THINGS TO REMEMBER

Beer, wine, whiskey, contain alcohol. Alcohol, too, is a substance which has only harmful effects upon our growth. It lessens the work our muscles can do. It makes us unable to resist sickness. Doctors and scientists have shown that it is bad for grown people, so of course it is much worse for children.

Tea and coffee contain no real food. We found that real foods either make us warm and give energy, or they help build up our bodies. Tea and coffee do none of these things. If not too strong, a little tea and coffee do no harm to grown people. But tea and coffee are very bad for children. They contain a substance that overworks the nervous system. They keep us awake nights, and so prevent us from getting sleep that we need. If we use tea and coffee while we are growing, they will surely injure our nerves, our hearts, our digestions. Weak cocoa made with milk is a good food, because of the milk in it; but strong cocoa is like tea or coffee.

The only good drinks for children are pure water, fruit juices and milk.

THINGS TO THINK ABOUT

1. When athletes are training for a foot-ball game, they use no alcohol or cigarettes. Many use no tea or coffee. Why do you suppose they do without these things?

2. Why do wise parents give children milk to drink, though they themselves may use tea or coffee?

3. Think of the strongest wild animals you know. The strongest animals that work for man. Where do they get their strength? What do they drink?

4. Do you drink tea or coffee? Will you promise to stop for one month?

5. Will you drink one glass of milk a day? Two glasses? Your teacher will help you to remember by asking each day and keeping a record for you. Notice how your milk-drinking affects your sleep at night, your weight at the end of the month.

CHAPTER XIX

A MAGIC PLANT

RUTH looked up with a sigh from "Alice in Wonderland." "Oh, how I wish I could find a bottle of that stuff that Alice found!"

"What stuff? I don't remember about it," said Mother.

"The stuff that was labeled 'Drink me.' It wasn't labeled 'Poison,' so Alice drank it and it made her grow smaller and smaller until she was little enough to go through a tiny door into a magic garden."

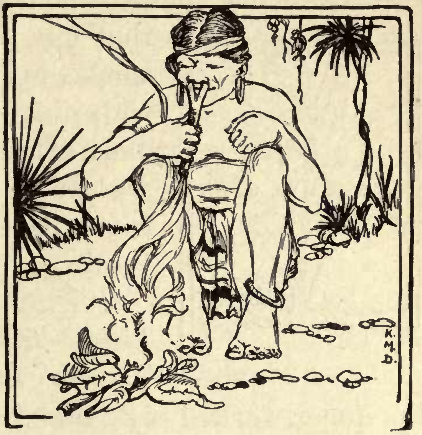
"And did she stay small?" asked Mother.

"Oh, no! Afterward, she ate a cake that made her grow bigger than ever."

"Well, I don't know anything that will make a tall person little," said Father, "but I can tell you of something that will help to keep a little person from growing tall."

"Can you, Daddy? What is it?" cried Paul, clambering on to his Father's knee.

"It doesn't come in bottles," said Father. "It is a very interesting plant. Long, long ago, when Columbus first sailed across the ocean he sent some of his sailors in a rowboat to explore the island of Cuba. When they came back to the big ship, they said that they had seen Indians carrying lighted torches and breathing smoke out of their noses and mouths. These Indians had forked pieces of hollow wood, shaped like this. They made a fire from the leaves of a certain plant, then put the two branches of the hollow stick to their nostrils and breathed in the smoke. All the Indians smoked. They used their pipes as we use watches, to measure the time. Instead of saying, 'He has been gone an hour,' they would say, 'He has been gone two pipes.' Often they kept on smoking until they fell over in a sort of faint."



"How queer!" said Ruth. "What plant did they smoke?"

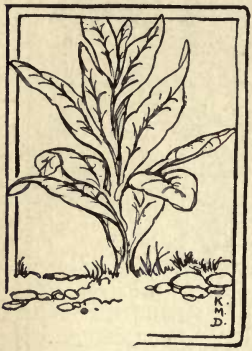
"It is a first cousin to our old friend, the potato; but I am sure our good, honest potato must be ashamed of such a relative. Bring me the dictionary, please, Ruth. Now here is a picture of this plant."

"What is its name, Daddy?" asked Paul.

"You will guess in a moment, Paul. Some years after Columbus returned to Spain, the plant was brought to Europe and soon everyone was smoking it. They had an idea that it would cure or keep away disease. London was a very dirty city in those days, and a terrible disease called 'The Plague' broke out there and killed thousands of people. But instead of cleaning up and killing the germs of the disease, what do you suppose they did?"

"What?" queried Ruth.

"Everyone smoked. Every morning, at a famous school called Eton, the little boys were made to smoke. One Eton boy, named Tom Rogers, said afterward that one morning when he didn't smoke, his teacher gave him a hard whipping. Nowadays boys are more often whipped *for* smoking."



"Was it regular tobacco, like what men smoke now?" asked Paul.

"That's just what it was. They called it tobacco because 'tabaco' was the Indian name for the queer, forked pipe that I showed you."

"Did they all smoke pipes?"

"Yes, at first. Then they began to sniff powdered tobacco up their noses. It was a very dirty habit, but the most fashionable gentlemen, and even ladies, took snuff, as they called it. Later, people took to chewing tobacco and smoking cigars. By this time, people knew that tobacco wasn't a medicine and never cured anyone of anything, and ministers preached against it. In New England, on Sunday, people were forbidden to smoke anywhere in the villages, but nothing seemed to stop them. You see, the curious thing about tobacco is that it acts as if it really were a magic plant, as the Indians thought. If you once get into the habit of using it, it makes you feel miserable to go without it—you gradually become a slave to it."

"How does it make people stay little?" asked Paul.

"It seems to affect children's bones, so that they don't grow as they ought. Then, too, it upsets a boy's stomach and heart and nerves, so he isn't strong and sturdy, and that prevents his growing."

"What does it do to his heart?" asked Ruth.

"It makes it beat feebly and irregularly, so that if he plays base-ball, he gets out of breath. The heads of the League teams hate to have their players smoke, because they know it spoils their game."

"Doesn't it ever keep diseases away?" asked Paul.

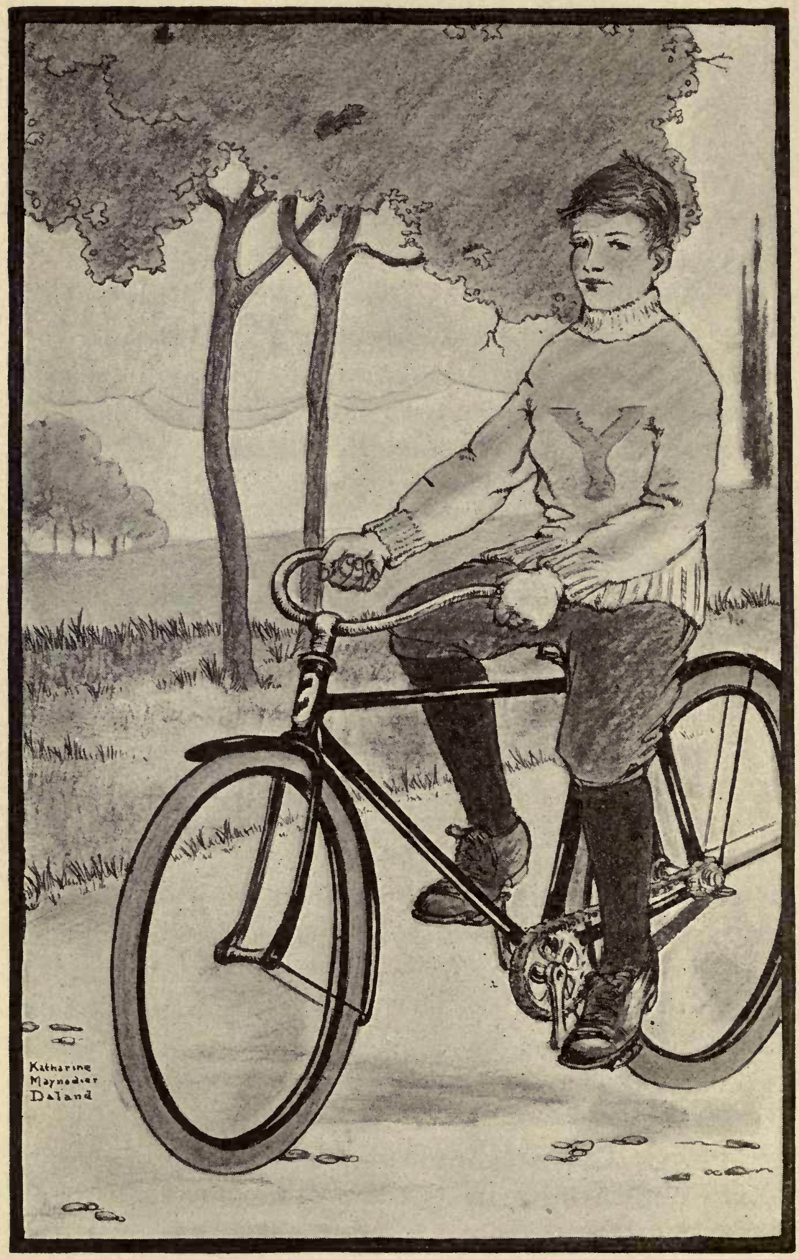
"Bless you, no! Just the opposite. People who smoke have weakened stomachs and hearts, and their throats and mouths are all sore from the smoke, so they are much more likely to catch any disease that comes along than other folks are."

"Why do they want to do it, then?" said Ruth. "It seems so silly."

"Let me show you a picture," said Father. "This is a picture of me on my cigarette bicycle, as I called it. When I was about fourteen, a boy named Ned Sterling came to our school from New York. He was a year older than I, and I thought he was wonderful. Ned called me a 'sissy' because I had never learned to smoke. I was too cowardly to stand that, so I learned to smoke cigarettes."

"Did they make you sick?" asked Paul, with deep interest.

"At first they made me dreadfully sick, for Mother Nature always warns us when things are bad for us.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But I got used to it and felt very grown up and important when I smoked with Ned and one or two other boys behind the Sterlings' barn. After awhile, though, I found that even apple-pie didn't taste very good. When I ran, I got all out of breath. I felt cross. My hands were shaky, and my lessons took me twice as long as they used to do. One day, when I brought home my school report, my arithmetic mark was 'Failure.' "

"What did your Father say?" asked Ruth.

"He looked at the report and then at me. Then he said, 'I'm going to test your arithmetic. Here's an example for you—If a boy buys a five-cent package of cigarettes every day, how much will he spend in a year?' So I multiplied three hundred and sixty-five by five cents. How much does it make, Ruthie?"

"Let's see. It makes eighteen dollars and twenty-five cents," said Ruth.

"That is what I told my Father. I have never forgotten his answer. He said, 'Are you willing to lose not only $18.25 a year, but also your health, your standing in your classes, your position on the ball-team, and the confidence of your Mother and myself, all for the fun of smoking a package of cigarettes?' I only hung my head. 'Now, Son!' he went on, 'suppose you lay aside that five cents every day and at the end of the year buy the bicycle that you've been wanting. How about it?' So we shook hands on it and I've never smoked since. I was the proudest boy in town when I rode past Sterlings' on my wheel."

"How did your father find out that you were smoking?" asked Paul.

"From the way I acted and from the dirty, brown stain that the cigarettes left on my fingers. Leaving off smoking made me feel sick at first, but I soon felt better than I had done for a long time. My next arithmetic report was 'Very good,' and I was made captain of the base-ball team. You know, not long ago, some experiments were made at Springfield, Massachusetts. The students threw base-balls to see how many 'strikes' they could pitch, and they also tried aiming at a target to see how near the bull's-eye they could come. Then, afterward, they each smoked a cigar and tried throwing and aiming again. They found that the smoking made their hands so unsteady that they could not throw or aim nearly so well."

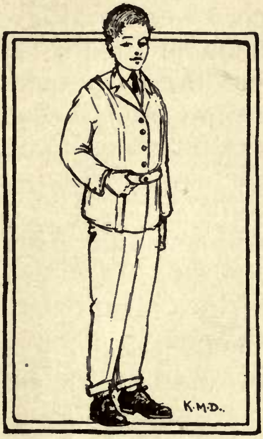
"My!" said Paul. "I guess I won't ever smoke. I want to be a base-ball pitcher when I grow up."

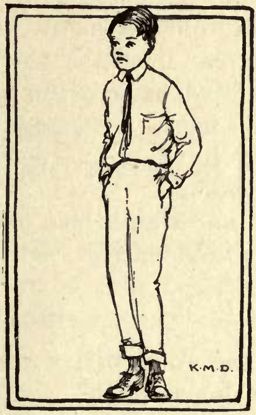
"Well, Sonnie," said Father, "even if you should decide to be a millionaire, not smoking would improve your chances, for most people prefer to hire boys who don't smoke. Thomas A. Edison, who has invented so many wonderful things, and is the head of a great business, never employs anyone who smokes cigarettes."

"I think," said Mother, "the children would like to see two pictures that Judge Lewis gave me. These are two boys, Sam and Dick, who both came to the Judge asking for a place as his office boy. The Judge said that it just happened that the two boys were born on the same day."

"But Sam isn't nearly so tall as Dick," said Ruth.

"No. That was why the Judge was so interested that he took their pictures. Sam was six inches shorter than Dick and fifteen pounds lighter. Which boy do you suppose the Judge hired?"





"Oh, Dick, of course—he looks so much stronger than Sam."

"Yes, he took Dick," said Mother. "Sam had been taking the stuff that keeps boys little. Cigarettes are like Alice in Wonderland's bottle—they aren't marked 'Poison,' but they ought to be, oughtn't they?"

"Let's come out and play on the lawn," said Father. "We've talked tobacco until I begin to feel as headachy as if I had been smoking it. Let's play tag. I'll be 'It.' "

THINGS TO REMEMBER

Tobacco, like tea and coffee, contains a substance that prevents children from growing into strong men. This substance seems to affect the bones, checking their growth. Boys who want to be tall and successful in athletics will not use tobacco. Besides stunting growth, the dangerous drug in tobacco acts on the nerves, and makes them unsteady and unreliable. Through the nerves, it weakens muscles. It makes the heart-beat weak and irregular, so that tobacco users soon get out of breath. Because the smoke irritates the inside of the nose and throat, germs of disease often find it easy to enter the bodies of tobacco users. Because the heart is weakened, smokers find it harder to recover from severe sickness than other people.

No one should use tobacco until he is fully grown, and then in moderation.

THINGS TO THINK ABOUT

What good will it do a boy to wait until he is grown before he smokes?

Why is smoking forbidden to boys on the ball teams? To boys in offices, or at work?

What are the bad effects of tobacco upon a boy's body? Does the use of tobacco have any bad effects on the pocket-book? Prove how it might.

CHAPTER XX

SAFETY FIRST

"I WISH I could see a real giant," said Ruth, "not just a big man, like the one we saw at the circus."

"So do I," chimed in Paul. "I'd like to see one like the genie in the Arabian Nights. He was shut up in a bottle, and when he got out, he was as tall as a mountain and could do wonders."

"Dear me," said Mother, "did you suppose all the giants were dead, or lived only in story-books? Why, there are several giants who live right here in our house."

"Where are they? I never saw any," cried Paul.

Laughingly, Mother held up a box of matches. "One of the strongest of all the giants," she said, "is shut up in here. His name is fire. He can be squeezed into this tiny box, but if you set him free and he finds something to feed on, he can eat up this house, this street, even the whole city. Every year, here in the United States, he eats about $200,000,000 worth of houses and property and kills or hurts thousands of people. Oh, he is a strong and terribly greedy giant."

"But we couldn't get on without him, Mother, could we?" said Ruth.

"No, indeed. He warms our houses and cooks our meals and runs our steam cars. He is very useful. But we must keep him where he belongs and never let him go free, or he may be like the genie in the Arabian Nights and try to kill us. That is why I always buy 'safety' matches, because they won't light on anything but the box. Other matches often get lighted by accident."

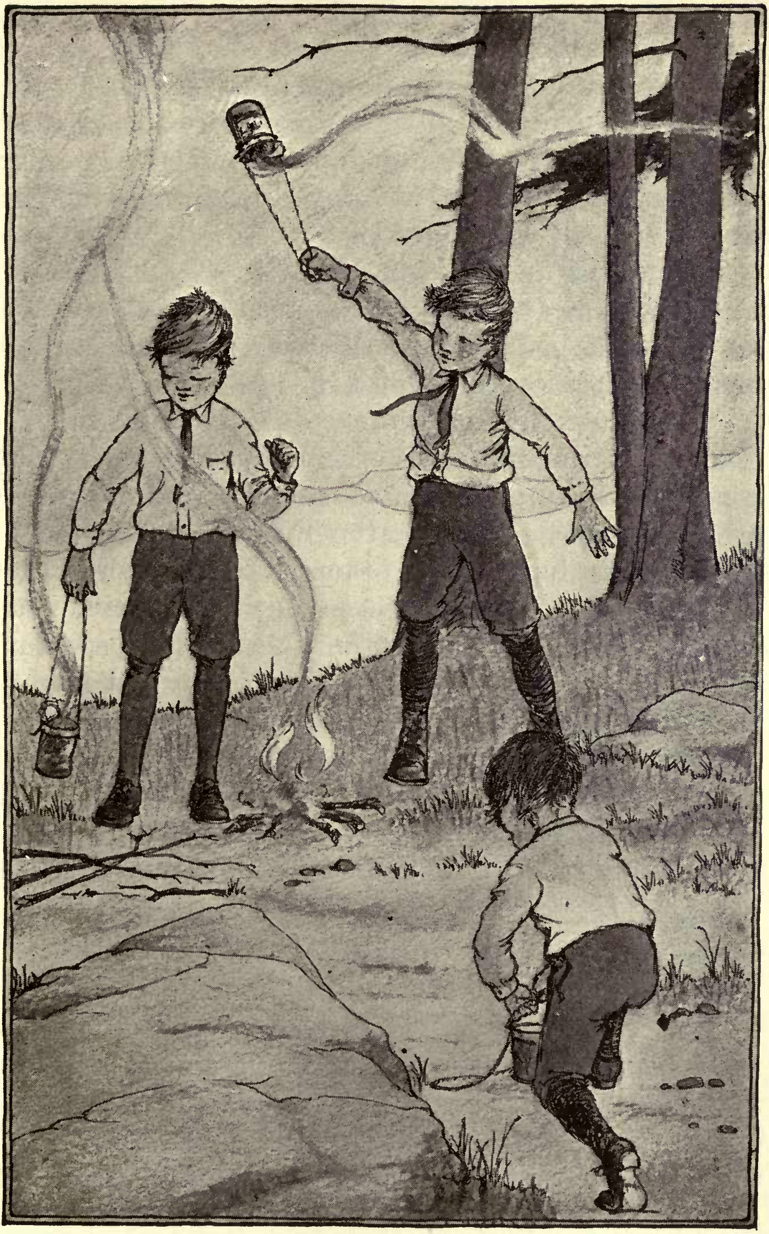
"Aunt Louise uses the other kind, but she always keeps them in a tin box, so if they did catch fire, it wouldn't spread," said Ruth, "and she is always very, very careful to blow them out before she throws them away."

"Yesterday," put in Paul, "some of the fellows built a bonfire and put some of the fire in tin cans and swung them around like this."

"Yes, I've often seen them do that," said Mother, "and I always think that the Fire giant is just waiting for a chance and some day will jump out and catch them. Children all seem to love fire, and I don't wonder, for he is beautiful, but he is too dangerous a playfellow to be worth the risk. That is why, nowadays, most large cities won't allow bonfires in the streets, and why sensible people have stopped celebrating the Fourth of July with fire-crackers and go on picnics, or have some other fun instead."

"Mother, why can't you put gasoline near the fire?" asked Ruth. "Yesterday, at Nellie's house, her Mother was cleaning her gloves with gasoline and she took them out into the other room, so as not to be near the stove."

"Why, you see, Ruth, gasoline, kerosene, benzine and all sorts of oil are foods that the Fire giant just dotes on. When he smells them he gives one great



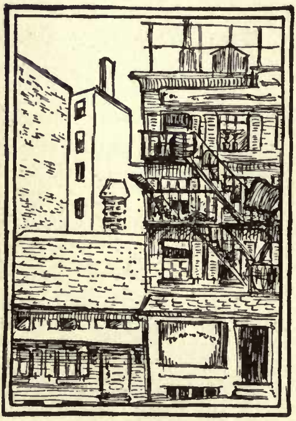
leap to get them. That is why you should never, never pour any kind of oil on a fire. If you do, the fire will suddenly jump right up at you and probably will try to eat not only the oil, but you, too. Another thing to remember is that if you ever light the gas oven, you must open the door first."

"What happens if you don't?"

"Sometimes the fire flares out at you. I know a lady who was badly burned that way. The lace around her neck and sleeves caught fire."

"Goodness! What did she do?" cried Ruth.

"She lay right down on the floor, seized a rug that was there, wrapped it around her shoulders and rolled over and over. You see, the Fire giant, like other folks, has to have air in order to live. So when he catches you, don't ever run. That only makes a breeze and helps him. Lie down and wrap something heavy around you and roll over. That will quickly kill the fire."



"We had fire-drill at school yesterday," said Paul. "The whole school marched out in three minutes."

"Good," said Mother. "That shows that if a real fire comes, the children won't get frightened and push and run, but will be quiet and brave and march out quickly and in order, so no one will be hurt. I'm glad the fire-escapes at school are all kept clear. One day

I went down in a crowded part of the city that looked like this. Just see how everyone has put his vegetables and bedding and garbage out on the fire-escape. What do you suppose would happen if there were a fire in one of those houses?"

"I guess a lot of folks would break their necks trying to use those fire-escapes," said Ruth.

"So do I," said Mother. That's why it is against the law to keep anything on a fire-escape."

"You said there were a lot of giants, nowadays, Mother. What others are there?" asked Paul.

"Well, there is a very wonderful one whose home is in the sky. He lights our streets and runs our trolley cars, but he is even more dangerous than fire."

"What's his name?"

"His name is electricity. You have often seen him flash in the sky during a thunder-storm and you've also seen him flash and heard him crackle from the wire of a trolley-car. Wires over which the electric giant runs are usually carefully guarded, for he is so strong that one touch of his finger can kill, but sometimes a wire breaks and falls into the street."

"Oh, yes," said Paul, "I saw one yesterday, when I was coming home from school."

"Those wires usually are safe," said Mother, "but sometimes one is what we call a 'live' wire—that means that there is electricity in it—and anyone who touches it runs the risk of being killed."

"Gracious!" exclaimed Paul. "I almost touched that wire yesterday. Sam Adams dared me to, but I didn't."

"I wonder why it is," said Mother, "that children seem to think they must do any silly thing that they are 'dared' to do."

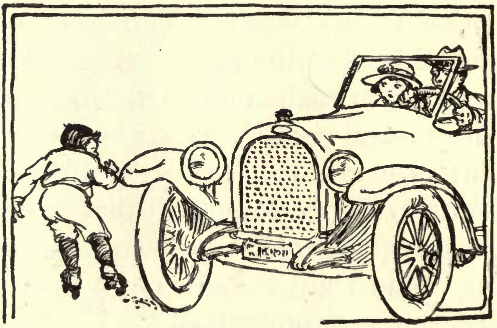
"Why, because," answered Paul, "the fellows say you are a coward if you don't dare."

"Look here, Son," said Mother, drawing Paul toward her, "last night, I saw a moth fly into the gas. Wasn't he a brave animal?"

"No," said Paul. "I think he was a big silly. If he had had any sense, he would have known it would burn him."

"Then you really think that useless running into danger is not brave, but silly?"

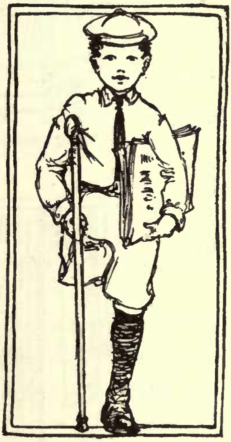
"Yes, I suppose it is," Paul admitted.



"Well then," said Mother, "the next time a boy says 'You don't dare do this or that,' just say to him, 'I'm not such a goose as to try it when I don't have to.' Of course, if you *have* to go into danger, as the firemen and policemen do, to save someone else, that is really brave."

"When I was riding with Uncle George last week," said Ruth, "a boy was roller-skating in the street and he nearly went under our wheels. Uncle George turned aside just in time. He said it frightened him so, he was almost sick."

"I wonder," remarked Mother, "that more children aren't hurt and killed—they play ball, and hitch on wagons, and run all over the street without ever looking. I shall be glad when more playgrounds are opened, so the children will have a safe place to play."



"Last Sunday," said Paul, "Daddy bought a newspaper of such a nice boy, but he had only one leg and he had to go on crutches. Daddy asked him how it happened, and he said that when he was not much bigger than I am, he lived near a railroad. He and the other boys used to play on the tracks and jump on the freight trains to steal rides, and one day he jumped and missed his hold and fell and the train cut off his leg."

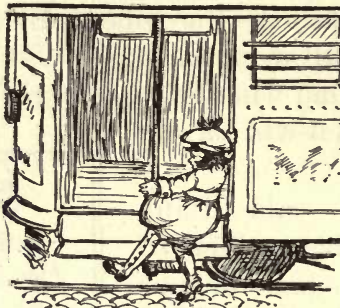
"Oh, how dreadful for him to be lame all his life!" cried Ruth.

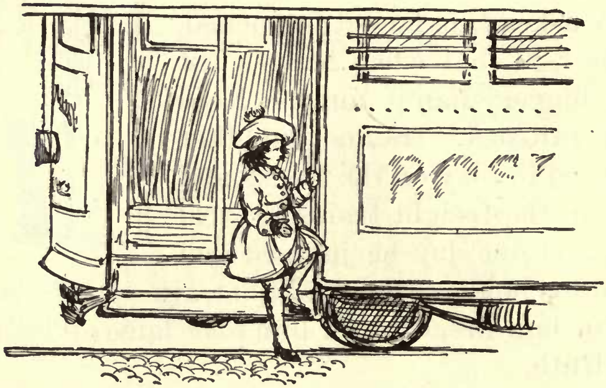
"And just for the sake of a moment's fun!" said Mother. "But many people are hurt not jumping on, but getting off of, cars. Do you know the right way to get off a car?"

"I—er—no, I don't believe I do," admitted Ruth.

"Well, here is a picture of the right and wrong ways. You see that this little girl is facing the back of the car. The car has started, and what has happened?"

"Why," said Paul, "it has jerked her backward and she is going flat on her back."





"Exactly," said Mother, "but this little girl faces forward, so when the car starts she is facing in that direction and is not so likely to fall."

"Which foot do you start to get off with first?" asked Ruth.

"Forget your feet and just remember to face the front of the car," said Mother. "And another thing is, always remember to look and see whether another car is coming the other way, before you cross the track."

"Dear me, there are an awful lot of dangers, aren't there?" sighed Ruth.

"No, indeed, Ruthie. The world is a beautiful and safe place for people who obey Mother Nature's laws, the laws of their city and country and their own common sense It is a dangerous place only for people who 'don't know' or 'don't care.' Now let us harness up the Fire giant and make him cook some dinner before Father gets home."

THINGS TO DO

Find out some of the things that make fires burn. We do this to learn how to control them.

Get a student-lamp chimney, a piece of candle about one-half inch long, and several matches. Light the candle and put the chimney over it. Notice how long the flame lasts. Now lift the chimney, light the candle and replace the chimney, but lift it from the table on each side of the candle by resting its lower rim upon two matches laid on each side of the candle. Does this experiment tell you one thing a fire must have, to burn? Does it tell you how to put out a fire?

Find a fire extinguisher in your school. The teacher will show you how it works, and when to use it.

Find the fire alarm nearest to your home. If you live in a city find out how to send in a fire alarm.

Perhaps your teacher will take your class to the nearest fire department house, where you can learn how fires are fought in your home.

Find out as many as you can of your city's rules for making the streets safe. If you have a sand-table in your school, make in it the busiest corner in your town, and show as many of the traffic laws as you can.

Make a safety-first picture book. In newspapers and magazines you can find pictures of many articles men have invented to make buildings, cities, streets, automobiles, trains and factories safe. Collect all of these that you can and put them in your book. Tell what each article is for. Put a star over every one you have seen.

THINGS TO REMEMBER

Fire is our friend if we control it, but a terrible enemy if we do not. Most fires may be prevented if we will remember the following simple things: Fire needs air to burn. Fire needs fuel. The fuel must be hot enough to "catch" fire. Therefore greasy rags, newspapers, shavings, must never be kept piled closely together where they can gather and hold heat enough to let them "catch" fire. This means that we must keep attics, basements and closets free from rubbish. When a fire does break out, all air should be shut from it at once. This means that we must smother it with water, sand, earth, or heavy rugs pressed close to it. We must never start a breeze by opening doors and windows, or by running, if our clothes catch fire.

Matches should never be carried by children. All of us should use safety matches or keep the other kind in tin or glass boxes. We should always pinch the used end before throwing the match away.

Oils of any kind should never be brought near a fire.

Gasoline should never be used in the room with *any* open flame—stove, lamp, candle or gas-jet. Better use it outdoors.

When we go into any public building, we should always find the fire escape nearest to us. The fire drills at school help teach us to move quickly and quietly out of any building.

Accidents sometimes happen through carelessness with electricity. Electricity travels through metals very easily. It also travels through our bodies. It may then kill us, if there is enough of it. We can avoid accidents from electricity by never touching any wires or rails along which electricity may possibly be traveling. At home, we should not handle the switches, or the exposed ends of the electric fixtures.

Still more accidents happen because people do not obey their city's rules for safety on the streets. Find out your city's traffic laws and obey them. Some traffic rules are these:

Never cross the street in front of moving cars, or without looking both ways.

Never try to get on or off a car in motion.

Never try to catch a ride, on a wagon or automobile.

Always obey the traffic policeman's orders.

Never cross the street except at crossings.

Never ride on the steps of a car.

Do not play in busy streets.

The good citizen is the person who avoids needless accidents, and protects others by knowing and obeying the city's laws.

THINGS TO THINK ABOUT

1. Suppose that a child is playing before the fire, and a spark flies out, setting his clothes on fire. You are near by. What do you do? Why?

2. You discover a fire in the basement of your home. What do you do? Why?

3. Name all the things any one of us could do in our homes, to protect them from fire.

4. How do good citizens behave in public buildings to prevent fires? To prevent panics, in case of fires?

5. How can we avoid accidents from electricity?

6. What can each of us do to lessen accidents on the streets of our city?

7. What are the most important traffic laws of your home town to prevent street-car accidents? Automobile accidents? Railroad accidents?

8. How could we show other people how to avoid accident? How could each of us be a "Safety Scout"?

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